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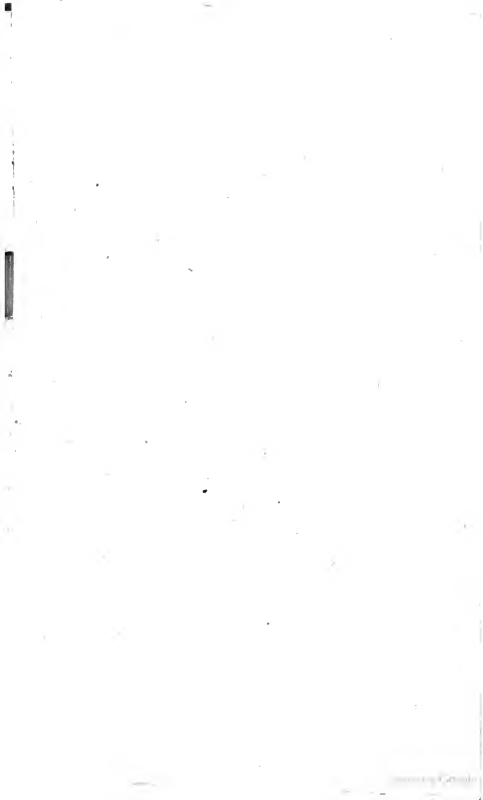
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THE  
RURAL ECONOMY  
OF THE  
MIDLAND COUNTIES.  
VOL. I.









Published according to Act of Parliament June 20<sup>th</sup> 1796 by G. Street Pall Mall

2011

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THE  
RURAL ECONOMY  
OF THE  
MIDLAND COUNTIES;  
INCLUDING  
THE MANAGEMENT OF  
*L I V E S T O C K*  
IN  
LEICESTERSHIRE AND ITS ENVIRONS;  
TOGETHER WITH  
*M I N U T E S*  
ON  
AGRICULTURE AND PLANTING  
IN THE DISTRICT OF THE  
MIDLAND STATION,

---

By Mr. MARSHALL.

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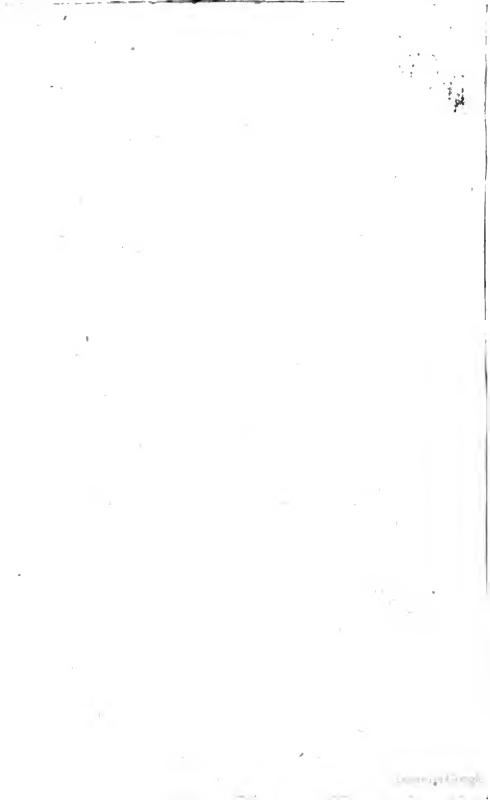
IN TWO VOLUMES.  
VOL. I.

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L O N D O N :

PRINTED FOR G. NICOL, BOOKSELLER TO  
HIS MAJESTY, PALL MALL.

MDCCLXX.





TO HIS  
ROYAL HIGHNESS  
THE  
PRINCE OF WALES.

SIR,

IF YOUR HIGHNESS's virtues were not publicly known, I should think it my duty, and it would be my highest gratification, to declare them in this address. But on a subject so well understood, and so fully illustrated in YOUR ROYAL HIGHNESS's conduct, the tribute of my pen could not avail.

Therefore, without *attempting* to praise, and without *daring* to flatter, I presume to inform YOUR HIGHNESS that I am pursuing a PLAN,  
VOL. I.                    A                    which,

## DEDICATION.

which, in its principles, is calculated to prolong the PROSPERITY of the ENGLISH NATION ; and that nothing could alleviate so much the labour of the pursuit, as the APPROBATION of YOUR ROYAL HIGHNESS; nor anything add so much to the celebrity of the undertaking, as the PATRONAGE of THE PRINCE OF WALES.

Permit me, then, in YOUR HIGHNESS's known goodness of disposition, to commit these Volumes, as a part of the General Work, to YOUR ROYAL PATRONAGE ; and to declare myself with becoming respect, and with the most perfect attachment to YOUR HIGHNESS's CHARACTER,

YOUR ROYAL HIGHNESS's

MOST OBEDIENT AND

MOST HUMBLE SERVANT,

*WILLIAM MARSHALL.*

LONDON, JULY 1, 1790.

# ADVERTISEMENT

TO THE

## FIRST VOLUME.

**T**HE MATERIALS of this Volume were collected, chiefly, some years ago, during a residence in the MIDLAND COUNTIES of somewhat more than two years\*.

But, with a view to the fulness and accuracy of the register, I have since thought it expedient to make a second survey of LEICESTERSHIRE and its ENVIRONS, where I spent three months of the last summer (1789); my principal object, in this second view, being that of making myself more fully acquainted with the subject of LIVE-STOCK.

A 2

THUS

\* At STATFOLD, near the junction of the the four counties of LEICESTER, WARWICK, STAFFORD, and DERBY, where I chiefly resided, from March 1784 to April 1786.

## ADVERTISEMENT.

THUS THE PUBLIC are furnished with a detail of the progress of this undertaking, from the first proposal of it, in 1780, to the present time: a period of somewhat more than ten years.

The practice of NORFOLK was collected in the years 1780, 1781, and 1782, and published in 1787.

That of YORKSHIRE, in 1782 and 1787, and published in 1788.

That of GLOUCESTERSHIRE, in 1782 and 1788, and published in 1789.

That of the MIDLAND COUNTIES, in 1784, 1785, 1786, 1789, and is now under publication.

It may be proper to add, that the PUBLIC are now likewise furnished with the whole of the information I have hitherto collected on the subject of RURAL ECONOMY; excepting that which I necessarily obtained of the established practice of the SOUTHERN COUNTIES during five years residence in them\*; also excepting a variety of detached

\* See MINUTES OF AGRICULTURE, &c. IN SURREY.

## ADVERTISEMENT.

tached ideas, which, being deemed in themselves not sufficiently important, or not yet sufficiently authenticated, to admit of being published in their present state, still remain scattered in the original papers belonging to the several Districts I have resided in ; and excepting such other desultory ideas as I have collected in passing between District and District. No part of either of these, however, are intended for separate publication ; and the practice of the SOUTHERN COUNTIES requires a second and deliberate survey, before a detail of it can be entitled to the reception of the PUBLIC.

## ERRORS OF THE PRESS.

Vol. I. page 65, line 4, from the bottom, for *utter*,  
read *entire*.

—— page 73, line 9, for *effort*, read *effect*.

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THE  
RURAL ECONOMY  
OF THE  
MIDLAND COUNTIES.

**T**HE ISLAND, if its surface could be brought within a single point of view, would appear strongly featured by an association of mountain, upland, and vale, interspersed with irregular tracts of middle-land country, partaking of the nature of vale, but, having no regular chain of highlands on their margins, are not distinguishable by that name.

The northern and the western provinces abound with mountains and bold highlands ;

VOL. I.

B

while

while the eastern, the southern, and the mid-land counties, though they sometimes rise to chalky heights, with some few heathy barren swells, are seldom distinguishable into highland and vale.

As objects of RURAL ECONOMY, however, these middle-land tracts are, generally, very similar to vale districts; the soil and produce of each being similar: with, however, some exceptions; as East Norfolk, for instance, which, though it lies flat and somewhat low, is most of it covered with a light sandy soil; and a few other instances might be produced: but, in general, the soil of this description of country is of a stronger, more clayey nature.

The district, which forms the subject of the present volumes, bears the last description; being the largest tract of the kind in the island; including the principal parts of the counties of LEICESTER, RUTLAND, and WARWICK, with the northern margin of NORTHAMPTONSHIRE, the eastern point of STAFFORDSHIRE, and the southern extremities of DERBYSHIRE and NOTTINGHAMSHIRE, the town of LEICESTER being situated near its center.

This

This fertile tract of country, which I shall distinguish by the MIDLAND DISTRICT, measures, in some directions, not less than fifty miles across, in none, I believe, less than forty; consequently, contains at least fifteen hundred square miles of surface; with no other drawback from its fertility, than the Charnwood hills, which do not contain fifty miles of infertile soil\*.

This district I have traversed in almost every direction, and have, I believe, made myself sufficiently acquainted with its rural affairs, to give me an adequate idea of its GENERAL MANAGEMENT; especially as it relates to LIVESTOCK.

B 2

But

\* LEICESTERSHIRE, however, contains two other plots of surface, less fertile than the rest of the district. One on the northern margin; distinguished by the name of the WOLDS: a swell of considerable height, covered with a singularly cold, dark-coloured, clayey soil. The other in the southwestern quarter; likewise high land, with a cold retentive subsoil; but with a lighter more sandy soil. But, the rocky points of the forest hills apart, the county contains no *barren* surface: it has not, perhaps, an acre worth less than five shillings; and but few acres worth, on lease, less than ten shillings an acre. The entire county is not, at the present rental value of lands, worth much less, on a par, than fifteen to twenty shillings an acre: an estimate which, I believe, no other county will bear; RUTLANDSHIRE, perhaps, excepted.

But the part, of this extensive tract, which has engaged a more particular share of attention, is bounded by the TRENT on the north, the TAME on the west, the SOAR on the east, and the ANKER and its banks on the south: a district which, for the fertility of its soil, and a spiritedness of management, especially in BREEDING, cannot certainly be equalled in these kingdoms.

The ARABLE MANAGEMENT of the Midland District is confined within still narrower limits. The district, at large, is a grass-land country. Breeding, grazing, and the dairy, prevail in different parts of it. But, in the richest finest plot it contains, the four branches of husbandry are united, and carried on by men of property and abilities.

This district is situated between the Charnwood hills and the western banks of the Trent, the Tame, and the Anker; including the four points of the counties of LEICESTER, WARWICK, STAFFORD, and DERBY; being seated everyway near the centre of the kingdom.

A more interesting subject of study, for the purpose of the plan I am executing,  
could

could not well be conceived; being not more interesting on account of the nature of its situation, soil and produce, and the repute of its occupiers, than on that of its general management, being peculiar and regular.

This being, *fortunately*, the DISTRICT of the STATION, and that of whose ARABLE MANAGEMENT I shall principally speak, it will require an accurate description.

The OUTLINE is irregular. The EXTENT may be estimated at one hundred and fifty square miles; or about a hundred thousand acres.

The CLIMATURE is *below* the latitude it lies in (about  $52^{\circ} 45'$ ); its seasons are near a fortnight before those of East Norfolk, which is situated in a similar latitude; and many days earlier than those of Gloucestershire, which enjoys a more southern situation. On the western side of the district, harvest is generally as forward as in Surrey: in 1785, some oats were cut, and much wheat and barley ripe, the 28th July. What is very observable, the seasons on the Tamworth side of the district are a full week

B 3 forwarder

forwarder than they are on the Forest side, only ten or twelve miles distant. But this, perhaps, may be accounted for by the coldness of the base of the Forest hills\*.

The SURFACE of this charming plot of country is various. Its general elevation is much greater than that of most middle-foiled districts. Some of its swells might, in regard to elevation, be deemed upland; yet, in fertility, it is throughout equal to most vale districts.

The SOIL, in general, is a rich middle loam; interspersed, however, with a few less fertile patches. Toward the foot of the Charnwood hills, much of it is of a more sandy nature; but of a singularly free and fertile quality. Taking the district of the station, throughout, it ranks, in utility, with the first districts of the island. The swells, though high, are generally fertile to the summit; and the dips between, though wide and flat, are found, and easily freed from

\* It is observable, that in October 1789, while the beans and much barley remained out, in Berkshire and the surrounding counties, the Midland District, though it lie near a hundred miles farther towards the north, had done harvest a month or six weeks.

from surface water. The entire district, except a few narrow bottoms, and the immediate margins of the rivers, is equally productive of corn and grafs.

The foil of the north of Warwickshire, away from the banks of the Anker, is of a colder less productive quality; west of the Tame a light sandy foil prevails; and Derbyshire, except the southern extremity, and the immediate bank of the Trent, is still more of an upland or mountainous nature.

The DISTRICT of the STATION therefore, considered with regard to foil, might be termed a bay of the MIDLAND DISTRICT, into which it opens on the south-west; its management being traceable as far as the banks of the Soar above Leicester; gradually assimilating with the more grazing parts of Leicestershire.

The SUBSOIL prevalent in this district is a *red clay* (provincially “marl”), resembling the red foils of Herefordshire and Nottinghamshire. In some places a concrete *sand*, increasing in hardness with the depth to a soft gritstone, occurs in different parts; and a *sandy loam*, or brick earth, mixed

B +

with

with veins of sand and gravel, is a pretty common subsoil.

The ROADS, through the nature of the soil and substrata, are necessarily bad. But of these hereafter.

INCLOSURE. Thirty years ago, much of this district was in an open state; and some townships still remain open: there are others, however, which appear to have been long in a state of inclosure; and in which, no doubt, the present system of management originated.

The PRODUCE of this district, as has been intimated, is chiefly *corn* and *grafs*; little, very little *woodland* within it. It is, however, surrounded on almost every side with well wooded tracts.

In the light of ORNAMENT, the MIDLAND DISTRICT, viewed generally, and in its present state, is much inferior to the northern and western quarters of the island. The views, are frequently pleasing, through the variety of surface and richness of soil, but are seldom picturesque, unless when the Charnwood hills enter within them. The district, in a general point of view, discovers  
a tame,



a tameness; a kind of still life; which, however, clothed as it is, in the verdure and richness of herbage, renders this district desirable as a place of residence; though, at present, it is not striking to the mere traveller. Nevertheless, were the billowy swells of Northamptonshire and south Leicestershire as well wooded as those of Herefordshire and Kent, they would, in beauty, be inferior to neither of those counties. The surface of Northamptonshire is broken in a manner, which renders it singularly susceptible of ornament: and, at present, the **BANKS** of the **TRENT**, especially about **NOTTINGHAM** (singularly fine situation!) are as beautiful as ground wood and water can make them.

The **DISTRICT** of the **STATION** has still greater natural advantages: it is in a manner surrounded with what the landscape painter would call good distances. The Charnwood hills, the Derbyshire mountains, Needwood Forest, the Beaudefert hills, and other hills of Staffordshire; and, in some situations, the Lickey, the Clent hills, and the more prominent hills of Shropshire, may be caught.

Nor

Nor is it, at present, destitute of internal beauty. The **BANKS** of the **TAME** afford some beautiful subjects of landscape; and a lovely plot round **HINTS**, westward of the **Tame**, is in the best style of Kent or Herefordshire. The situation of **TAMWORTH\***, for the richness and beauty of the country round it, is one of the finest in the kingdom.

The **CHARNWOOD HILLS**, are too striking a feature of the Midland District to be passed without especial notice. Like the Malvern hills, their style is singular; but the style of one is very different from that of the other: The Malvern hills, seen from a distance, bear a most striking resemblance to the Atlantic Islands; towering up high and ragged; and, on a near view, appear as one large mountain fragment. The Charnwood hills, on the contrary, seen obscurely, appear as an extensive range of mountains; much larger, and of course much more distant, than they really are. When approached, the mountain style is still preserved; the prominencies are distinct, sharp, and most of them

\* Formerly the residence of the Mercian kings.

them pointed with naked ragged rock. One of these prominencies, **BARDON HILL**, rises above the rest; and, though far from an elevated situation, comparatively with the more northern mountains, commands, in much probability, a greater extent of surface, than any other point of view in the island.

It is entirely insulated, standing every way at a considerable distance from lands equally high. The horizon appears to rise almost equally on every side: it is quite an ocean view, from a ship out of sight of land; at least more so, than any other land view I have seen.

The Midland District is almost every acre of it seen lying at its feet. Lincoln cathedral, at the distance of near sixty miles, makes a prominent object from it. With a good glass, the Dunstable hills, at little less than eighty miles, may, it is said, be distinctly seen. The Malvern hills, Mayhill, and the Sugar Loaf in South Wales, are distinctly in view. Enville, the Wrekin, and other mountains of Shropshire and North Wales, are equally distinguishable. And the Derbyshire hills, to the highest peak, appear at hand.

hand. An outline, described from the extremities of the views, would include near one-fourth of England and Wales. It may be deemed, without risque, I apprehend, one of the most extraordinary points of view in Nature.

ESTATES,

## I.

## E S T A T E S.

ESTATES, here, are small. Fertile districts were early cultivated; and, at the Conquest, the lordships probably were dealt out separately. Nor does there appear to have been, since their distribution, any accumulation of lapsed property in the district immediately under survey. It has few principal residences \*; nor any off estates, I believe,

\* GOSAL, built and laid out, at the expence of a hundred thousand pounds, by the late Mr. JENNINGS, famous for his friendships to Handel and the Pretender; and BOSWORTH, the seat of Sir WOLSTAN DIXIE; are the only residences *within* the district. FISHERWICK, the princely residence of the EARL of DONNEGAL, and a *creation* of Mr. BROWN, at the expence, probably, of much more than a hundred thousand pounds, is situated on its northwestern margin; and KIRKBY, the seat of LORD WENTWORTH, on the opposite extremity.

lieve, of more than two or three thousand a-year\*.

In YEOMANRY, of the higher class, the district of the station abounds, in a superior manner. Men cultivating their own estates of two, three, four, or five hundreds a year, are thickly scattered over almost every part of the district. There is an instance of a man whose lands, in their present high state of cultivation, are not worth less than two thousands a year, cultivating them, *as a yeoman!*

What a superior character! How much more respectable, thus, than clinging, as a minor gentleman, to men of fortune and fashion! A German prince is probably less respected, in the environs of his residence, than Mr. PRINCEP is, in the neighbourhood of CROXALL.

The TENURE of this district is mostly *freehold*; with some little *copyhold*; but, I understand, little or no *leasehold*.

#### THE

\* Lord STAMFORD's estate round GROBY, on the southern skirts of the Forest hills, is more; but little if any of it reaches, properly, within the district of the station.

## 2.

THE  
GENERAL MANAGEMENT  
OF  
ESTATES.

THERE ARE few districts in which less is to be learnt on the subject of managing estates, than in this. The estates are small; and the management little more than that of receiving the rents. It will, nevertheless, be right to take a view of its practice.

MANOR COURTS are pretty generally held; even where the copyhold tenure is extinct; and their utility experienced.

PURCHASE OF LANDS. Some years back, the same species of frenzy,—*Terramania*,—showed itself, here, as it did in other districts\*. Forty years purchase was, then, not unfrequently given. Now (1785) thirty years

\* See YORK. ECON.

years purchase, on a fair rental value, is esteemed a good price: There are some recent instances of lands being sold at twenty years purchase. But this may be accounted for. At the time these purchases took place, the interest of the funds was extraordinarily high. By navy and victualling bills, new loans, &c. five or six percent. was made of money. And this will ever be the case. The *interest* of the funds will always have more or less influence on the price of land. Hence, those who wish to secure lands at a moderate price, should purchase when the funds are advantageous.

TENANCY. Farms, in general, still remain *at will*, and the occupiers, though large and many of them opulent, still appear satisfied with this species of possession: for although estates have been raised, the spirit of over-renting cannot be said to have yet pervaded the district. Nevertheless, here, as in most other districts, there are men who, through necessity or avarice, are stretching their rent-rolls, and in consequence, prudently endeavouring to secure their rents, and their estates—as well as they can—



can—by *agreements* and *leases*; either for a term, or from year to year. The prevailing form will be given at the close of this article.

For a striking instance of the confidence which still subsists between landlords and tenants, see MIN. 24.

RENT and TITHE. The rent varies, of course, with the soil and situation. Near TOWNS, land lets exceedingly high. Immediately round Tamworth, a considerable market town, the land, peculiarly rich, lets for three to four pounds an acre. This, however, is in some measure accounted for in the quantity of garden ground cultivated, here, for the Birmingham market.

Taking the district of the station throughout, twenty shillings an acre is, at present, the full rent, for inclosed lands. Thirty or forty years ago, the old inclosures, of the best quality, did not let for more than twelve to fifteen shillings: the rise, therefore, has been considerable, but, in general, not excessive. There are small parcels let for twenty-five shillings, and some few much higher;

higher; but, I believe, there is no entire farm of any size, let at present (1785) for more than twenty shillings an acre, round.

And even at these rents much of the district is TITHE-FREE; or enjoys modusses for grafs land; and where the land is titheable, the tithe is seldom taken in kind. I met with only one instance: "Bosworth Field"—by Doctor Taylor.

Formerly, the tithe of some townships, in *this* neighbourhood, was taken in kind;—under a custom or regulation which might, when this disgraceful business takes place, be universally adopted. If the titheman set up his own sheaves, he took every *tenth*: but, if the occupier undertook to set up,—only each *eleventh*! Thus not only a saving of labour; but frequently, no doubt, a saving of produce was obtained. The titheman lost nothing on the whole, and the occupier was a gainer on a certainty.

The rent of tithes varies in this as in other districts, with the value of the given land; and the species of its produce. For arable land (little or no *fallow*), worth  
twenty

## 2. MIDLAND COUNTIES. 19

twenty shillings an acre, five shillings may be considered, I believe, as the medium rent of the tithe. For grass land, about two shillings. For an entire farm, two-and-sixpence to three shillings an acre.

**COVENANTS.** By the prevailing custom of the country, landlord builds and does extra repairs,—tenant the ordinary repairs of buildings, and takes the sole care of fences; materials being allowed;—with, generally, the liberty of lopping hedge-row timber.

**REMOVALS.** To the honor of the landed interest, the removal of tenants has been hitherto little practised, and of course is little understood. Many of the first farms have descended from father to son, through a series of generations; and some of them, there is great reason to hope, may long continue in the same line of descent.

The time of removal is Ladyday; when, according to the prevailing custom of the country, entire possession of an inclosed

C 2

farm

farm\* is given by the outgoing to the incoming tenant: even the barns are given up at that time; the outgoer generally carrying off his wheat crop; and sometimes his last year's manure.

RECEIVING. The customary times of receiving are Michaelmas and Ladyday: the tenant being allowed six months credit.

Formerly, an extraordinary custom has been in use, in this quarter of the kingdom; and, by some old *leases*, still remains in force, in the interior parts of Staffordshire. Instead of the landlord giving the tenant six months credit, the tenant, by this custom, agrees to be six months in advance; covenanting to pay what is called a "FOREHAND RENT;" that is, to pay down the rent prior to the occupancy. In practice, however, the rent is seldom paid until four or six months after

\* In the open field township, the outgoing tenant has what is called "the waygoing crops:"—that is, the wheat and spring corn sown previous to the quitting.

after the commencement of the occupation; namely, when it is due or nearly so. This custom was, no doubt, founded on the security of the landlord: and some extraordinary circumstances, probably, led to its establishment.

**FORM OF LEASE.** The lease, from which the following heads are digested, is the only modern lease I have met with in the district. It is, at present (1786), the most prevailing form in use. It contains some good clauses; but wants many alterations, and several additions, to render it a complete form.

**LANDLORD AGREES** to let, &c. &c. from year to year\*.

#### LANDLORD

\* An admirable clause, suggested by a man whose extensive and accurate knowledge of rural affairs in all its branches, is superior to most men's, has lately been introduced into some articles of agreement, from year to year, in this district.

The great use of leases, *for a term of years*, is that of encouraging improvements, and the great objection to letting *from year to year* is their discouragement. But if, in the latter case, the landlord covenant, as he does in the clause under notice, to reimburse the tenant, when he quits, for such *real improvements* as he shall make, or

LANDLORD RESERVES mines, quarries, &c. &c.

TENANT AGREES to take, &c. and to pay the stipulated rent, "within forty days, without any deduction for taxes;" and double rent so long as he continues to hold after notice given.

Also to repair buildings; accidents by fire excepted.

Also to repair gates and fences.

Also, when required, to "cut and plash the hedges, and make the ditches, three foot by two foot, or pay or cause to be paid to the landlord, &c. one shilling per rood for such as shall not be done after three months notice has been given in writing."

Also

the *remainder* of such improvements, at the time of quitting, the objection is, in some degree at least, obviated.

Somedifficulty, no doubt, will lie, in ascertaining the quantity of improvement remaining, at the time of quitting. There are, however, men, in every district, who are adequate to the task of estimating a matter of this kind, with tolerable accuracy. And it is certainly preferable to risque the difficulty of settlement, than to let an estate suffer for want of due improvement.

2. MIDLAND COUNTIES. 23

Also not to lop or top timber trees; nor to cut hedge thorns, without plashing and ditching.

Also not to part with the possession to any person or persons (the wife, child or children of the tenant excepted) without licence and consent; under forfeiture of the lease.

Also not to break up certain lands specified in a schedule annexed, under 20l. an acre.

Also not to plow, &c. more than a specified number of acres of the rest of the land "in any one year;" under the same penalty.

Also to forfeit the same sum "for every acre that shall be plowed for any longer time than three crops successively, without making a clean summer fallow thereof after the third crop."

Also the like sum "for every acre over and above ——— acres (clover excepted) that shall be mowed in any one year."

Also that at the time of laying down the arable lands to grass, he shall "manure them with eight quarters of lime an

acre used in tillage, and lay the same down in an husbandlike manner, sown with twelve pounds weight of clover seeds, and one strike (or bushel) of rye-grass seeds upon each acre."

Also to spend on the premises, in a husbandlike manner, all the hay, straw, and manure; or leave them at the end of the term, for the use of the landlord "or his next tenant:" the outgoing

TENANT being ALLOWED for the hay left on the premises, "at the time of quitting."

Also (provided he quit "at the request of the landlord (unless for the breaking of these articles) and peaceably and quietly yield and deliver up possession") "for all such clover and rye-grass as shall be sown in any time in the last year."

Also for such lime as he "shall cause to be expended upon the premises, within twelve months before the time he quits."

Also "for all fallows made within that time." These several allowances to be settled by referees.

MUTUALLY



2. MIDLAND COUNTIES. 25

MUTUALLY AGREE that "without any new agreement in writing being made concerning the same, all and every of the covenants, clauses and agreements, herein contained shall be obligatory on each of the said parties hereto, and their representatives."

For conversation on *tenancy*, see MIN. 24.

For a caution to extraparochial owners and occupiers, see MIN. 33.

For a proposed clause against slovenliness, see MIN. 76.

FARM

## 3.

F A R M  
B U I L D I N G S.

THE FARM BUILDINGS of this district are many of them large, substantial, and commodious; and have several particulars belonging to them, that require attention.

The MATERIALS of the district are these. The *walling* material almost wholly brick. The *timber* mostly oak, of which the builders are still lavish. The *covering* material, formerly thatch; now, principally, in *this* district, knobbed plain tiles; but, in Leicestershire, mostly blue slate\*. *Ground flooring,*

\* BLUE SLATES. These are raised near Swythland—provincially “Swidland”—on the southern skirts of the Charnwood hills; where an immense excavation has, within the last fifty years, been made.

Superficial

### 3. MIDLAND COUNTIES. 27

*flooring*, mostly paving bricks. *Chamber flooring*, oak, elm, or plaister: the two last are now most common in farm houses: in this, an inland country, deal has not hitherto been much in use; but even here, it is now becoming the fashionable material.

The CEMENT of this district is entitled to particular notice. In *common stucco*, *plaster floors* and *water-tight walls* the midland counties excel; but in the last most especially. Water cisterns are frequently formed by a nine inch brick wall, standing naked above ground; yet as tight as a stone trough!

Some-

Superficial quarries have been worked, time immemorial; but their produce was of a coarse quality, compared with those which are now raised; some of which are nearly equal to the Westmoreland slate.

They are raised in blocks, blasted from an almost seamless rock. The blocks are first cleft into slabs; and the slabs afterward into slates; or, if too strong and coarse for this purpose, are thrown aside, as coarse flags, for various uses. Out of the larger blocks, chimney pieces and tombstones are cut.

The same kind of blue rock is found in different parts of the Forest hills; but none, yet, which affords slates equal in quality to the "SWIDLAND SLATES."

Something depends on management, in forming these walls: but much more on the nature of the LIME with which they are built. There is only one sort with which they can be rendered tight with certainty. This is the BARROW LIME, which not only sets with extraordinary hardness, but remains invulnerable to the elements; setting water, drought, and frost at defiance\*.

The

\* BARROW LIME. Barrow, situated on the banks of the Soar, nearly opposite to Mountsoarhill, in Leicestershire, has long been celebrated for its lime.

It is an interesting fact, that the stone, from which the Barrow lime is burnt, is, in colour, texture, and quality of component parts, the same as the *Claystone of Gloucestershire*, from which the strong lime of that district is burnt; and what is still more remarkable, it is found in similar situations and deposited in thin strata divided by thicker seams of calcarious clay, in the very same manner, in which the claystone of Gloucestershire is found. See *Glo. Econ.* vol. i. p. 13. 15. and 32.

One hundred grains of the *stone* contain eighty-six grains of calcarious matter; affording fourteen grains of an impalpable tenacious silt, which seems to be possessed

The only preparation, of this extraordinary cement, is that of washing the sand, and assimilating it intimately with the lime, by beating; and the only judgement requisite in using it, is to hurry it into the wall as quickly as possible from the kiln.

The FARMERIES of this district, as has been intimated, are some of them on a large scale. That of Dunnimeer, in this neighbourhood, is the most extravagant suite of farm buildings I remember to have seen.

The

fessed of some singular properties; forming a subject well entitled to future enquiry.

One hundred grains of the *clay* contain fortyfix grains of calcarious matter, leaving fiftyfour grains of residuum, a fine clay.

Hence this earth, which at present lies an encumbrance in the quarries, is richer in calcariosity than the CLAY MARL of the Fleg hundreds of Norfolk, with which very valuable improvements are made. See NORF. ECON. vol. i. p. 22.

Since writing this article, I have observed, in the VALE of BELVOIR, at the northernmost point of Leicestershire, a similar stone, situated in a similar manner, and producing a similar kind of lime.

The only thing noticeable in the **BARN** of this district is an improvement, lately introduced I believe, in the means of supporting the roof. Instead of beams and principals, *partial partition walls* are raised, on either side the floor and between the bays, to take the purlines; leaving an opening, or large doorway, in the middle of the building, to admit the corn.

In a capital barn, where two pair of purlines were necessary, the cheeks of walling are narrow; not more than five feet wide; receiving the lower purlines only; with short beams and principals, resting on the tops of the cheeks or partial partition walls, to support the upper ones.

This mode of construction is cheaper than *oak* beams; takes the weight of the roof in a great measure off the side walls; and frees the body of the barn from beams (well known nuisances in filling a barn); yet stiffens the building. On each side the floor, these partial partitions are evidently eligible, on these and various other accounts; without any evident disadvantage.

**BARN**

### 3. MIDLAND COUNTIES. 31

**BARN FLOORS.** In this district, a peculiar method of *laying wooden barn floors* is in practice. Instead of the planks being nailed down to sleepers, in the ordinary way, the floor is first laid with bricks, and the planks spread over these, with no other confinement than that of being "dowled" together (that is plowed and tongued) and their ends let into fills or walls, placed in the usual way, on each side the floor.

By this method of putting down the planks; provided the brickwork be left truly level; vermin cannot have a hiding place beneath them; and a communication of damp air being effectually prevented, floors thus laid are found to wear better, than those laid upon sleepers. It is observable, that the planks, for this method of laying, ought to be thoroughly seasoned.

For the method of laying barn floors with bricks, see MIN. 14.

In this district, I met with a striking instance of the impropriety of laying barn floors with over-grown oak. A floor laid

laid with plank cut out of the stem of an *aged* tree, but which, at the time of laying, appeared to the eye perfectly *sound*, was beaten to pieces in a few years. Barn floors require youthful, stout, strong-grained wood.

In the STABLES of this district I have seen nothing remarkable; except that the manger is sometimes of brick.

The modern COWSHED of the Midland District, more especially I believe of the District of the Station, is built on an expensive plan; being furnished not only with a gangway before the heads of the cattle, and mangers for dry meat, but also with water troughs, on a principle similar to that on which the still more extravagant fattening stalls of Gloucestershire are built\*. But with this difference, that instead of each bullock having a separate stall, divided from the rest, by whole partitions reaching across the shed, the cows, here, stand in pairs, with only a partial, but beautifully simple division—provincially a “boosing”—between each pair.

\* See GLO. ECON.

This



This division consists of an upright post, set in the front of the manger, or between the troughs, with an arm, natural or artificial, springing near the ground, and rising to the same height as the post; forming together the upper part of the letter K, stiffened by slots or bars, running through the two pieces. The cattle are fastened by chains, passing round the necks, and playing, by means of rings, upon "stakes" fixed to the sides of the partition posts.

By this admirable contrivance, the cattle are prevented from goring each other, as effectually as if they were divided by whole partitions; while they have the entire platform, from end to end of the shed, as free to rest on, as if there were no guards between them\*.

The

\* In the sheds of a superior manager, however, I have seen a different method of constructing these partial partitions; which, instead of the triangular form described above, are formed by two posts placed upright, or nearly so; the partitions being nearly the same breadth (about eighteen inches) at top and bottom; having found that the cows, when lying down, are liable to get their heads (frequently turned back in that

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posture)

The old FARM-YARDS of this district are principally open; with mangers round the inside of the fences; and with cribs in the areas: sometimes with hovels inclosed by slabs *set upright*, or tall fagots closely woven together. In the commonfield townships, here, as in the more northern provinces, bean stacks are still not unfrequently placed on these hovels, as temporary winter roofs. A species of farm building, this, which I apprehend was formerly most prevalent; but which, in a few years, will probably be forgot.

In an open yard, belonging to one of the first managers of the district, I saw a DRINKING CISTERN on an admirable plan. It is formed by a watertight wall, raised high enough above ground to prevent the cattle from stepping into it, and low enough to let them

posture) beneath the common boofings, thereby subjecting themselves to a degree of danger; and finds that a partition, eighteen inches deep, does not prevent them from occupying the whole platform. Besides, these upright guards may be beneficial in preventing their encroaching on each other's room, as they are sometimes apt to do with the triangular guards.

them drink freely. The brickwork, which forms a cistern about four feet square, is guarded by a post at each corner, with rails passing from post to post, over which rails the cattle drink. It is fed by a covered pipe (of pipe bricks) reaching to a large drinking pool, at some distance from the yard; so that while this is full (which it is in winter) the cistern is so likewise to the brim. If it overflow (which it generally does at that season) a waste-water pipe conveys the surplus out of the yard.

Cisterns of this kind, when they can be formed at an easy expence, are much preferable to pits, in farm yards.

A long TROUGH, by the side of a fence, and guarded by a rail, would, under these circumstances, be still better than a cistern.

In some few "RICK YARDS" of this district, a STACKGUARD, of a peculiar kind, is noticeable. It consists, simply, of a circular parapet wall, of brickwork, two to three feet high; with a coping projecting on the outside, to prevent vermin from climbing up; and with the area, or floor, on the inside, laid securely with brick (on a level with the

ground on the outside) to prevent their undermining; as well as to keep the bottom of the rick perfectly dry.

#### REFERENCES to the MINUTES on FARM BUILDINGS.

For an evidence that every *hogsty* should have a rubbing-post, see MIN. 4.

For the operation of laying *barn floors* with bricks, see MIN. 14.

For the improvement of Statfold *farmery*, see MIN. 25.

For observations on *cattle sheds*, see MIN. 28.

For the operation of *charing posts*, see MIN. 29.

For evidences that a *lobby* is requisite to a *farmery*, see MIN. 112.

#### ROADS.

## 4.

## R O A D S.

IN A DEEPSOILED DISTRICT, destitute, in a manner, of hard materials, as this has been already represented, bad roads are in a degree excusable. Yet there are few districts, perhaps, in which genius and industry might not construct tolerable roads, at a moderate expence.

The roads of *this* district had probably remained in a state of almost total neglect, from the days of the Mercians, until some twenty years back; when a spirit of improvement went forth. Its principal road, from Tamworth to Ashby, lay in a state almost impassable, several months in the year. Statfold Lane had long been proverbial. In winter it was unfrequented; the riding and driftways, at least, being on trespass, thro the adjoining inclosures. Waggon were dragged on their bellies through it; to a

D 3 coach

coach it was impassable during the winter months: and might still have lain in that state, had not a material been applied to its amendment, which is seldom used in that intention; namely, SAND: a material which had been neglected in this case; though it was lodged, in sufficient abundance, in a part of the very road which, century after century, had lain in so deplorable a state.

In this instance, the base of the lane being levelled, the sand was laid on, eighteen inches to two feet or more thick, according to the nature of the bottom, on which it was laid.

This circumstance I mention for the use of townships that have sand, and no better material, in their neighbourhoods. And, having introduced the subject, it may be proper to make some remarks on the method of making SAND ROADS.

The prevailing error, which has crept into the modern method of forming roads, is that of raising them too high in the middle. (See YORK ECON.) But, here, the opposite extreme is prevalent,

The FORM of a made road, here, is that of a *trough*. The site of the road being marked

marked out, a mound of earth, provincially a "butment," is raised on either side; and, the bottom of the trough being levelled, the hard materials are spread evenly over it; leaving the surface of the road as flat as a floor\*.

The effect of forming a SAND ROAD in this manner, especially where the soil is retentive as in this country, is, the trough retaining the water of heavy rains, the sand, instead of being hardened and rendered firm, as in its nature it is liable to be by heavy rains, is formed into a grout with the water; horses wading, perhaps, halfway up to their knees in puddle; just as they would do in any other large trough filled with sand and water. After a great fall of rain, I have seen the dips of the road covered with large sheets of water, which lay there as they would in the bed of a river, until the roadman came with his hoe and his spade to open his "lets;" which in the dips of a sandy road are presently warped up; while the slopes

D 4

are

\* A more modern method of forming a road is that of raising two broad banks, dipping inward, or outward, or left with a flat surface, according to the judgement of the former; leaving a trough, three or four yards wide, between them; in which trough the hard materials are deposited.

are torn into gullies, quite down, perhaps, to the base of the road.

A sand road formed as a GRAVEL WALK, with a gentle convexity, and with an open free channel on either side, is subjected to none of these evil effects. Wet weather renders it firm; and the channels on the sides, when the descent is not too great, are rendered firm paths, for saddle horses at least, in dry weather. The SILT ROAD, across the marshlands of Norfolk, between Lynn and Wisbeach, is a proper pattern for sand road makers.

Censurable; however, as the principles of forming roads, in this country, evidently are, it would be improper to condemn them without full examination; as they have their *strenuous* advocates; and these men of the very first abilities.

ROADS incur a heavy tax on the occupiers of lands, and the principles of forming and repairing them, are as fully entitled to examination in a work on RURAL ECONOMY, as are those of FARM BUILDINGS, and FENCES. Roads are necessary to the farmer for conveying his produce to market. And, moreover,



moreover, the law obliges farmers to make and repair them for the rest of the community. They have, therefore, a twofold motive for examining carefully into the principles of making and repairing them. Yet there is scarcely any branch of rural affairs so little attended to, and of course so little understood, as that of roads.

In the Rural Economy of YORKSHIRE, threw together such practical ideas on this subject as I had, at the time of writing, collected, in various parts of the island.

At that time, I was fully acquainted with the modern principles of roadmaking in the Midland Counties; but being, at the same time, fully convinced that they were ill founded, I did not there notice them: nor should I, in this place, have taken up the reader's or my own time in explaining them, had I not, in going a second time over the district, found the *theory*, instead of being seen through and exploded, actually making its entry into common *practice*.

Roads are naturally *flat*, where the site is level or gently sloping; and naturally wear into *hollow ways*, on the sides of hills. The first

first retain a principal part of the water which falls upon them, and are worn into inequality by rain water *standing* upon them; while the latter are worn into inequalities, by the water of heavy rains *running* upon them.

To obviate these inconveniences, art and industry have been employed, during the present century at least, in rounding the former into the *barrel* or *convex* form, that the water which falls on them may have an opportunity of escaping; and, of course, that their surfaces may not be injured by *stagnant* water: and in moulding the latter into the same form, that their surfaces may not be worn into inequalities by *currents* of water.

By adhering uniformly to this selfevident principle, the *sloughs* of the former, and the *gutters* of the latter, are effectually done away, and, with due care, for ever prevented from returning: the entire surface, while this principle is adhered to, being smooth and even, yet free from hardness: of course, safe and pleasant to the traveller.

Formerly, in the rutty roads and hollow ways of our ancestors, it was a week or a fortnight's journey from York to London ;  
now,

now, the road being moulded and kept up, agreeably to the foregoing principle, it may be travelled in a day.

Nevertheless, the principle now under examination is directly opposite to that described.

By this principle round roads are reversed, and flat ones scooped into the *concave* or *hollow* form; the hollowness being preserved equally on level ground, and on the face of the steepest hills; the entire road, from end to end, being formed into a trough, to catch the water which falls in it: not, however, with any *intention* of impeding the pace of travellers, or of reducing roads to their ancient state, but under an idea of “*washing*” them.

The advantages held out, as arising from this principle of roadmaking, are those of freeing the road from dirt, in wet weather, and dust, in dry; and one which is still more valuable, that of saving expence in the repairing of roads: these advantages being held out as accruing in ALL SITUATIONS: the principle being likewise extended to ALL MATERIALS.

To

To examine this principle fully, it will be necessary to try the effect of water on roads of every material, and in every situation.

The MATERIALS of roads are *sand, loose gravel, binding gravel, flint and chalk*, and *stones* of various sorts\*, laid on loose; and stones set regularly as a *pavement*.

The SITUATIONS of roads may be reduced to a *level* at the bottom of a hill—a gentle *slope*—a *hill*—and a *level* at the top of a hill: or, in other words, a *dip*, a *slope*, a *steep*, a *plain*.

To give full effect to the principle, we will suppose a polished marble pavement extended across a varied surface, including those four sites or situations; the surface of the pavement being so moulded that the outer margins may be nearly flat, but somewhat dishing inward, with a shallow trough or hollow in the middle, some three or four yards wide: this being the required form; if any settled form be really fixed; of a “washway road.”

Suppose a thunder shower to fall on this road; the effect need not be explained: the

margins

\* Also the scoria of metals; cinders of different kinds; burnt clay, and other factitious materials,

margins would collect the rain water and throw it into the center, where a current would be spread over the hollow, and carry away with it the dust which might be lodged upon it; and, after the shower, even the dips and plains, *if exactly formed*, and having proper outlets for the water, would, with a few minutes sun and wind, become perfectly dry and clean: and, under this supposition, a drizzling rain would have a similar effect.

Suppose this polished road, formed with mathematical truth, to be covered with two or three inches deep of gravel, sand, and mud; such as all roads are more or less covered with; and to be cut irregularly into ruts, by wheel carriages, as all carriage roads are more or less liable to be cut.

Suppose a gentle friendly *waterspout* to steer its course along this road, filling its cavity without deranging its base; the evident consequence would be, the steeps and slopes would be washed clean; the dips would receive an addition of the best materials; and the plains be loaded with puddle.

A *thunder shower* on such a road would have this effect: the fuillage on the steeps and slopes being saturated, the water would  
begin

begin to trickle down the ruts; as the current increased, the first channel, no matter what direction it happened to take, whether down a straight rut, or a zigzag from hollow to hollow, would be widened; every moment drawing more and more water into it, until the *rut* were augmented to a *rill*; down which the torrent would pour; driving the sand and gravel into heaps and eddies, and carrying down the mud, with part of the sand and gravel, into the nearest receptacle; leaving the steeps and slopes with rough irregular surfaces; the dips, in this, as in the former case, receiving an addition of materials; and the plains, as before, retaining their own puddle.

A *drizzling rain* would reduce the materials on the steeps and slopes to a state of mortar; those on the dips and plains to that of puddle.

Reverse this marble road; changing its surface from the *concave* or *hollow*, to the *convex* or *round* form; and cover it with loose materials as before.

The *water-spout* would not leave a speck upon its surface; would wash it clean from end to end; having nearly the same effect in every situation.

The

The *thunder shower* would be injurious on the steeps, in proportion to the degree of convexity: the rounder the form, the sooner the current would escape to the sides, and the less injury, of course, the face of the road would receive. On the slopes the effect would be similar, but in a less degree. On the dips and plains, the current being immediately from the crown to the sides, would carry off the mud, in innumerable channels, leaving the gravel and sand undisturbed on the face of the road.

The *drizzling rain* would act somewhat similarly, in this, as in the other case; with, however, this difference;—on a round surface, the fullage could never get beyond the state of mortar; which if required might be easily thrust *down* to the sides; while in a hollow it would soon take the state of puddle, which nothing but a *scoop* could *raise*.

These being the effects of rain water on roads formed with mathematical exactness, its effects on roads worn into inequalities, as all public roads, in the nature of wheel carriages, unavoidably are, may be easily conceived;

ceived; even by those who have not seen the effect in practice.

In theory, a flat road with a hollow in the middle, may be plausible. Could the hollow be kept smooth as with a plane, and a sufficient body of water could be had, at will, to cover, or fill the hollow, at once, and could be made to run with an even current, along a plain and down a steep; whenever the road might want washing, its effect, no doubt, would be that of *cleaning* the hollow: the evident effect of which would be, a binding gravel would be rendered hard, a loose gravel still looser\*, and a rough stone road still rougher.

But

\* In this district, I observed a striking instance of this effect. A road up a bold ascent, being of this material, and lying, by accident or design, in the hollow form, had been washed, by a succession of rains, to a bed of clean sand and gravel; which, by a few weeks dry weather and continued draught, had been loosened some inches below the surface. The consequence was, when I saw it, the horses were drawing, or rather scraping, to their footlocks in loose slippery materials, unable without difficulty to find any firm foothold; while the resistance of such a bed of loose sand and gravel, to the wheels, requires no explanation.



But in practice, it is impossible to keep a public road in that state, nor can a body of water be had at command, to be let loose upon it in a moment\*; nor, in its nature, will water run briskly along a plain, or gently down a hill. The clouds alone could give the uncertain supply; and the effect of rain-water on roads has been explained: the ruts and hollows of a level are filled with standing water; the evil effects of which, though but an inch deep, are evident; while those of a steep, by drawing the current through them, are worn still wider and deeper: sand is torn into gullies: loose gravel driven into heaps: binding gravel worn into channels; and stone roads scooped into hollows, separated by ridges of naked stone.

Where a strong current of water is collected, whether on a steep or on a more gentle slope,

\* In some few situations, water might be pent up in reservoirs, and be let loose suddenly upon a road; but situations in general will not admit of any such expedient.

slope, and whether the material be stone or coarse binding gravel, the road, even supposing the water to be spread over it evenly, is necessarily rendered *a rough irregular pavement, strewn with loose stones*; which, or the points of fast ones, are the only surface left for the travelling animals to tread on. To a stumbling horse, such a road is of course dangerous; to a thin-footed horse, painful; and, to an ox, it may be said to be impassable: yet there are men who are at once advocates for working oxen, and advocates for wash-way roads!

The unsafeness and unpleasantness of hollow roads being evident (to my mind at least), the idea of their being less expensive than round roads remains to be examined.

The most perfect state of a road; that in which it is the safest and pleasantest to the traveller, and in which its wear is the least; consequently that in which it is the least expensive to its supporter;—is the state in which the interstices of the hard materials are filled up level with loose matter, as small gravel, sand, &c. giving a smooth  
even

even surface ; soft and elastic to the hoof ; yet firm enough to resist the wheels, without being cut into ruts, and sufficiently *covered* to prevent the hard materials from being exposed to their immediate pressure.

Suppose a trough road to be in this desirable state ; and suppose a heavy rain to fall, and a strong current to be spread *theoretically*, that is evenly, over the bottom of the trough ; the effect requires no explanation : the interstitial matter would of course be more or less washed out ; and the points of the hard materials be exposed to the nail, and the hoof exposed to them ; and in this unpleasant and unprofitable state it must of course remain, until the surface of the hard materials be ground down, to fill up the interstices : which done, and the road made travelling, and secure from excessive injury, another fall of rain takes place : another inch of hard materials is of course worn down : and thus, inch after inch, until the earthy foundation be reached. A more ingenious method of wearing away a road, could not readily be conceived : excepting that of wearing the

slopes partially with running water, and the plains partially with standing water; both of which are unavoidably effected, and in the fullest manner, by forming roads on the principle now under examination.

The impropriety of *generalizing* hollow roads being too evident to admit of farther examination, let us endeavour to ascertain the *particular circumstances*, under which they can properly be rendered useful. It is not probable, that men of strong natural abilities, and in a sound state of mind, should attach themselves to error, without some show of truth to lead them to it\*.

The

\* The advocates of the principle under examination are not the only roadmakers who have been led into error in the forming of roads. Some twenty years ago, the road between London and Hackney (about three miles, nearly on a dead level) was altered at an excessive cost, from the *barrel* to the *wave* form: under an idea that, by throwing a number of ridges across the road, instead of one ridge lengthway of it, the ruts, instead of preventing in some degree the increase of the water, would conduct it off the road. But experience proving, that, besides the natural length of the road being by this form increased, and the draft  
along

The most striking good effect of wash-ways is that of covering a level road at the foot of a high hill, with sand and small gravel, brought down the descent by heavy rains; and this most especially when a constant rill happens to spread over it, and carry away the soil; leaving nothing but the harder particles\*.

Another good effect of running water is on a short and gentle slope, where the natural foundation of the road—the natural subsoil—happens to be of gravel, or other hard material. In this case, a current of water, by carrying away the soil which is generally mixed, in greater or less proportions, among such a subsoil,—as it rises to the surface, keeps such a road in perpetual repair with little assistance of art,

E 3

But

along it being rendered uneven, and of course difficult, the dips became mere receptacles of dirt and puddle; this road, after having had a fair trial, was, at another excessive expence, re-altered to the barrel form.

\* The most *refined* use that road water could, perhaps, be put to, would be that of conveying it down by the sides of a round road, and spreading it over a flat at the bottom of a slope.

But even these *uses* of running water, confined as they are to a few situations\*, are ill adapted to *public* roads: the flats, during a continuance of drizzling or even moderate rains, are liable to be loaded with dirt; a rill, not once in a thousand instances, being at hand to keep them free; and the slopes are liable to be strewn with loose stones, and worn into inequalities by the *sport* of running water.

A *public* road; more especially a *toll* road; ought to be free from obstructions in all seasons:

\* With respect to the idea held out, that every soil and situation affords "a *something*," of which running water will *make* a road, it is much too wild to give chase to. That soils, in general, if worn long enough, that is deep enough, would on a gentle slope afford a something to bear a *horse* or other animal, may be true;—for although a horse path may be poached in wet weather; yet, in dry, it is, as will be shown, *trpd* level, again, to receive, with benefit, the water of heavy showers:—but not one soil or situation in a hundred is capable of affording hard *materials* sufficient to bear the wheels of *laden carriages*; which, as will be shown, tending, not to fill up and level, but to deepen, the holes and gutters made by running water, act in concert with it to render the road impassable,

seasons: and may with common care be kept in that desirable state, except after a long continuance of moderate rain; when the levels, let them be formed as they may, unless they be raised inconveniently round, and unless the materials be of uncommon hardness, will become loaded with dirt; which, as an obstruction to the traveller, and as tending, like standing water, to keep the road in a state of softness, and of course in a state of extraordinary wear, ought to be removed: not, however, with so unmanageable an instrument as water, which *cannot* be brought to *act* in level situations (the feet of hills excepted), but from hollow roads with *scoops*, and from round ones with *scrapers*; which tend, not to make the road unsafe or unpleasant, but to put it, as nearly as its general state of repair will admit, into the required state of perfection.

With respect to *private* and *by* roads, in which carriages never travel abreast and seldom meet each other, and on which the beasts of draft are always drawn single—there appears to be only one right method

of forming them; most especially where materials are scarce.

The principle had long struck me forcibly in theory, before I saw it carried into practice, in the Midland District.

On this principle, three lines of hard materials constitute the road: a middle path for the horses, with one on each side for the wheels.

In forming a road on this principle, the middle path is set out, by a line, or otherwise, as circumstances require, and the sod being removed, a carriage is drawn along, by horses walking in this path; the wheels of course marking out the middle of the two outer paths. Three trenches are then dug, of widths and to depths proportioned to the quantity of materials intended to be expended; leaving the paths, on filling in the materials, an inch or two below the adjoining surface\*.

This

\* A PRIVATE ROAD, for horses drawing double, requires to have the entire space between the wheel paths cleared from the natural soil, and filled up within a few inches of the surface, with hard materials. In this case, the collection of water may, on a long slope, be too



This method of forming WAGGON PATHS, aptly suggests a simple HORSE PATH, or bridle road : and the Midland District furnishes instances of horse paths being formed on this principle : indeed, it appears to have been, formerly, the Leicestershire method of forming horse paths by the side of public roads :—answering the awkward causeways of other districts.

Between Bosworth and Leicester are still the remains of one of these paths ; which, in the parts where it is tolerably perfect, is, by much, the safest and most pleasant horse

too great to be suffered to accumulate into one current, and, in such a situation, a road, even of this narrow width, ought to be laid round, or to have outlets for the water, at stated distances, on the face of the slope. But these outlets require a channel and dam across the road, to stop the descent of the current ; than which nothing is more dangerous and disagreeable, especially to carriages : yet this is the expedient held out by the advocates of hollow public roads ; on which, being wide, and the quantity of water collected great in proportion, these ditches and banks would require to be so deep (to preserve the road from greater injury), that each steep would become a staircase !

horse path by the side of a carriage road, I have travelled upon. A lady would canter along it with the utmost confidence \*. As the lines of turf on the sides encroach upon it, they are shaved off, and the path kept free and sufficiently wide.

These paths are less liable to be incommoded with dirt than theory may suggest. The slopes are washed by heavy rains ; and the dips, if proper outlets be opened into the ditches, which generally run by the sides of them, may be kept sufficiently free from water.

Thus, it is more than probable, the good effect of flat horse paths, sunk a few inches below the surface, led to the idea of carriage paths, and these to flat

\* How much preferable to the high, gawky, slippery, breakneck *causeways* of other districts ! These causeways however, which were probably intended to accommodate foot passengers as well as horses, are, or rather were, striking evidences of the efficacy of heavy rains in washing convex surfaces ; for being narrow and without ruts to impede the descent, they were in general kept perfectly clean : much too clean ; either for ease or safety in travelling.

flat carriage roads, with "butments" on their sides, agreeably to the practice of this district.

Be this as it may, flat horse paths are produced, in argument, as evidences in favor of flat carriage roads: a striking evidence, this, of the danger of generalizing ideas without due examination.

The effects of rain water, on narrow horse paths and on wide carriage roads, are very different. The quantity collected on the former is not capable of injuring the slopes, and readily finds its way off the levels: it has but a few inches to run to the outlet; with not a single lateral rut to impede its escape: while the slopes of the latter are injured by the accumulated current, and the levels unavoidably incommoded with standing water, which, from the middle of a flat or hollow road, has some yards to run, across ruts and ridges, before it can find the outlet.

Beside, the effect of the feet of horses and that of the wheels of carriages are dissimilar as light and darkness, or right and wrong; the one tends to level the surface  
of

of a road, the other to wear it into inequalities.

The human foot, by constant treading, tends to render a path, free from hard protuberances, perfectly smooth and level: by stepping on the higher parts, the wear and the pressure both tend to lower them, and to fill up the hollows between. The foot of a horse has a similar tendency: a horse which has the use of his limbs will not, if he can avoid it, set his foot in a hole, but treads on its margin\*; by which means hollows, and more especially narrow channels, are filled up. Thus we frequently see, at the foot of a long slope, a horse path, as the middle track of a waggon path in a by road, worn, in the morning, by a heavy fall of rain in the night, into a narrow channel, generally in the

\* I speak of holes which may be avoided in roads of hard materials; not of *SLoughs* of clayey lanes; which, being too wide to be avoided, are of course waded through, and, in proportion to the quantity of dirt brought out by the feet and legs of the travelling animals, are rendered deeper and wider by use.

the middle of the path; which, however, in the evening, if the traffic be great, we find entirely done away; the path being left smooth and level; or more usually somewhat hollow; but with a regular concavity; in the very form for which the advocates of hollow roads contend: and if water were poured upon it in quantity, it would spread itself over its surface; which being rendered firm and smooth, or nearly so, by the feet of the horses, the water, if not too rapid, nor continued upon it too long, would tend to render it still firmer and smoother; carrying off the soil which lay on the surface merely; leaving the sand and gravel in their places; acting in the very manner held out by the advocates for hollow roads.

To ascertain, in the fullest manner, the effects of wheel carriages on a road, it will be necessary to adjust its surface and roll it, until the loose matter covering the hard materials be smooth and firm.

The first effect of a carriage, passing along such a road, is that of making a longitudinal impression or rut, of a depth proportioned

portioned to the quantity quality and state of the covering matter, to the breadth of the wheels, and the weight of the load they bear, raising up a ridge or comb of the loose matter, and leaving it standing, light and porous, on either side of the rut. Another carriage passing nearly, but not exactly, in the same track, another rut is formed, and other ridges of loose matter forced up; or perhaps a line of the covering two or three inches wide, between the ruts, loosened and raised up from its firm smooth state.

By a continuance of wear, the surface of the hard materials is reached, and worn away: not, however, evenly, as a long broad-footed sledge passing along the surface would wear them; but, according to the nature of wheel carriages, in ruts and hollows: it being out of the power of art to render every part of a road equally firm; and not at all probable that the wheels of carriages passing upon it should wear every part of its surface exactly alike.

By the laws of gravitation and the action of wheel carriages, holes once begun in the surface of a road, no matter by what agent,  
instead

instead of being made less, as those of a path are by the feet of animals, are made deeper every time the wheel of a carriage passes through them. The periphery of the wheel acts as a chissel, which in falling into the hollow receives an impetus or acquired force, in addition to the actual pressure it is loaded with; and, in addition to this, an undue proportion of the general load is, of course, by placing it out of its upright posture, taken from the upper and thrown upon the lower wheel. See YORK. ECON.

Hence, the fact naturally arises, though not perhaps sufficiently attended to by road surveyors, that **HARD PROTUBERANCES**, beside being dangerous and disagreeable to travellers, whether on horseback or in carriages, are injurious to roads.

Every hard protuberance, as the point of a stone standing above the general surface of the road, is, in the nature of wheel carriages and the laws of gravitation, productive of four indentures or holes: two, by throwing an additional weight on the opposite wheel (passing both ways); and two more by the impetus or additional force given by the wheel

wheel (passing both ways) in falling on the common surface of the road.

And hence it becomes as indispensably necessary, to common good management, to lower protuberances, as it is to fill up indentures: to pick out or break down with a hammer (a work of little expence) stones or other obstructions; as to fill up the ruts and holes with additional materials.

The effect of the feet of *horses drawing in carriages*, varies with the degree of exertion in draft. In light carriages the effect is nearly the same as that of saddle horses, and of course tends to remedy, in some degree, the ill effect of the wheels. But when much exertion is required, the feet of draft horses tend to tear up, loosen, and make rough, rather than to render firm and smooth, the surface of the road.

Hence upon the whole we may venture to conclude, that the effects of water on a horse path and upon a carriage road, are as widely different, as are the effects of the wheels of carriages, and the feet of saddle horses. Water running down the slopes of a carriage road worn as described, is, by the  
well



well known laws of running water, drawn through the channels and hollows ; acting in concert with the wheels, in making them wider and deeper ; forming, by a continuance of wear, a rill, or perhaps two or three rills, on the face of the road ; while the rest of its surface is loaded with loose matter, on which the *current*, arising from ordinary rains, and in ordinary situations, has no power of action ; or, where the rills approach near each other, is left in narrow rough ridges, most inconvenient to the traveller.

To give full scope to the united action of wheel carriages and running water, on the face of a wide carriage road, we will suppose it to remain in a state of neglect.

The effects, which would necessarily follow, scarcely need to be particularized. The wheels and the water operating jointly to render its surface more and more uneven, the breaking of horses' knees and men's necks, the crushing of wheels and axles, the overturning of utter carriages, and, at length, the utter impassability of the road, would be the inevitable consequences.

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F

Even

Even running water, without the assistance of wheel carriages, is capable of producing the final effect; and in no great length of time; as is proved in a thousand instances, in which roads having been *turned*, and the old ones of course neglected, they have in the course of a few years become, to carriages at least, entirely impassable; and this altogether through the evil effects of running water on the surface of carriage roads.

If in these examinations and conclusions I have missed or exceeded truth, it has not been by design. Fully convinced of the importance of roads, as a subject in Rural Economy, I have long paid them great attention, and wish to make myself fully master of the subject: I have even suffered myself to conceive that hollow roads might possibly be right; though the principle, at sight, appears to be self-evidently wrong.

This summer (1789) being unusually wet, has afforded me a favourable opportunity of deciding, by observation, on the effects of round and hollow roads.

In

In traversing the District, I did not fail to notice these effects ; and in riding from Leicester to London, through Warwickshire, Oxfordshire, &c. &c. after a month or six weeks continuance of rains of every degree, I was, being more disengaged, still more attentive to the form and state of the roads.

The road between NOTTINGHAM and LOUGHBOROUGH is held out, by the advocates of hollow ways, as a specimen of their good effect:

This road, however, though much flatter than modern roads in general are, is by no means uniformly reduced to the principle and form contended for: indeed a part, which has been lately made, is thrown into the barrel form: a strong evidence that the trough principle, in this instance, is growing into disrepute. Taking it altogether in its present state (rendered more tolerable by parts which lie somewhat round, or which lie shelving on the sides of hills) and considering the materials, a charming gravel, and the publicness of the thoroughfare to pay for the forming and re-

F 2

pairs ;

pairs; the part I saw of it, between Trent Bridge and the top of Bunny Hill, may, without prejudice, be deemed one of the worst kept roads in the kingdom. The *steeps* torn into inequalities, strewed with large loose stones, and set with fast ones, in the true breakneck crushcarriage style,—and the *levels* loaded with mud to the footlocks. The more gentle *slopes*, though uneven, harsh, and unpleasant to travel upon, were certainly not indictable: a proof that on such surfaces, and with such materials, roads may be kept in a travelable state, in defiance of running water.

All that can be said farther of this road is, that had the materials been put into a better form they would have afforded a better road. In a country where good materials are sufficiently plentiful, a traveller who pays for his road, whether on horseback or in a carriage, has a right to expect that it shall be, not only sound, but safe and pleasant, to himself and his horses; and a still greater right has the proprietor of a laden carriage to expect to find the  
surface

surface of the road, he pays for, firm, and free from obstructions.

Between LEICESTER and HINKLEY (except about Hilton) the *material* gravel; the *form* round—(singularly well formed;) the *state*, nearly perfect, notwithstanding the season! even, firm, and in a manner free from dirt; except in some few places, where the middle being worn hollow, for want of being timely kept up to its form, had taken the *hollow form*, and which were, of course, full of water, dirt, holes, and protuberances.

Through HILTON (a considerable length) the road is intolerably bad. The *material* large stones: the *form* hollow—a rough irregular hollow pavement: the *state*, such as suggests the idea, that it is under the direction of a wheelwright, or a surgeon. No public road ought to be suffered to remain in such a state.

Between HINKLEY and COVENTRY, various: part of it through a coalpit country; nevertheless, and notwithstanding the season, even the levels, where the form was kept up round and even, and where the dirt, which had of course accumulated through

the season and excessive traffic, had been removed, were found, firm, travelable road: altogether on the *convex* principle; and altogether the best *coal* road on which I remember to have travelled.

From COVENTRY to WARWICK, the *material* gravel, the *form* convex; the *state*, in defiance of the weather, nearly perfect throughout: ten miles of the best gravel road in the kingdom.

WARWICK to STRATFORD — similar road; but not in such high preservation. Some of the levels worn hollow, and of course dirty: some of the slopes in the same predicament, and of course hard, sharp, and uneven.

STRATFORD to the foot of LONG COMPTON HILL, the *material* stone, a somewhat soft calcarious granate: the *form*, originally, convex; but, at present,—through a pretended want of materials, and the excessive wetness of the season, but in fact through neglect,—in the true hogtrough form: the *state* what may easily be conceived; a disgrace to the *trust*: a canal of puddle for miles together; and of course full of holes  
and

and knobs; some of them hid; others showing their heads above the batter. A saddle horse could not pick out a tolerable path: even foot passengers were wading to market, and servants to their places, to the tops of their shoes in dirt.

What a disgrace to the district through which it passes: what an imposition on the public, to demand toll for such a road: and what a loss to the proprietors! A road let down into *such* a state, receives more injury in one day (in a wet season) than it would receive in a week, if properly kept up to the form, and of course free from standing water. On this road, being mostly on the level, running water has not much power of injury.

LONG COMPTON to WOODSTOCK, the country more billowy (less level) and the road *somewhat* better kept.

WOODSTOCK to OXFORD,—the *material* the same kind of softish stone: the *form*, once convex; but now, like chaos of old, it is without form. The *state*, most difficult to describe. It is barely passable: as much worse than the road last described, as that

is worse than a fair travelable road : nevertheless, the toll gate is kept *locked* ! and a *double* toll exacted ! Literally highway robbery !

At present (October 1789) this road lies in a state of total neglect : excepting the *care* of half a dozen men endeavouring to let off the water ! and where this is impossible (the *pits* in the *rock* which forms the bottom of the *canal*, many of them lying below the neighbouring ditches), these *labourers* are employed in *scooping* out the batter !!! mere mockery : one shower of rain undoes in five minutes their whole day's labour.

The plea held out, for its lying in its present state of neglect is, that it is *taken*, but not yet entered upon, by the person or persons who have taken it to repair ; it being yet some weeks before their time of entrance commences !

But why shall the public suffer through the private quarrels or quirks of individuals ? This is at present one of the principal roads from London to Holyhead, and the main road to a considerable part of England and Wales : an avenue of Oxford ! and the high road to Blenheim !

OXFORD



OXFORD to HENLEY various: good or bad in proportion to the roundness or hollowness of the form; and the flatness or elevation of the country.

HENLEY to MAIDENHEAD,—the *materials* flint and chalk; the *form* convex; the *state* nearly perfect, notwithstanding the season. In most places as clean and as smooth as a gravel walk. The joint effort of the form and the materials.

Henley Hill (a great effort in roadmaking) affords, at present, a striking instance of the evil effect of running water on a steep. Though formed well, originally, some ruts, through neglect, have been suffered to catch the water; and being suffered, by the same neglect, to grow deeper and deeper, they are at length worn, near the foot of the hill, into furrows a foot deep!—which, by a few minutes timely attention to the infant ruts, might have been entirely prevented.

From MAIDENHEAD to LONDON, the *material* is gravel; the *form* convex; and the *state*, notwithstanding the country is a dead level, from end to end (twenty-six miles),  
and

and notwithstanding the unusual wetness of the season, was altogether such as no traveller has a right to find fault with. Where the convexity had been properly kept up, and the rain water prevented from lodging on the surface, it might be deemed in the state of perfection: except near town, where the wear is excessive; especially in places where the reduced matter and the dung dropt upon it, had not been timely removed, and there it was unusually *dirty*: more especially where it passes between rows of houses; which, depriving it of a considerable share of sun and wind, retards its drying in showery weather, and prevents the soil, in dry weather, from escaping in the form of *DUST*.

Throughout the ride, it was observable, that the state of the road as to *cleanness*, was, other circumstances being similar, in proportion to its *EXPOSURE*.

Hence the utility of keeping down the hedges of lanes, especially in low situations.

Hence also a disadvantage of *hollow roads*; which not only retain *MOISTURE*, in wet weather, but *DUST*, in dry; while that of a *round road* is scattered over the adjoining fields.

In

In snow, their comparative advantage is still more striking: a *borrow way* is well known to be the first place drifted up: the crown of a *round road*, the last place covered. In windy snowy weather, while one is rendered dangerous or impassable, the other is left free and safe for passengers.

From the whole of this enquiry, as well as to common observation, it appears evidently, that the NATURAL ENEMIES of roads are *rain-water* and *snow*; and that *sun* and *wind* are their NATURAL BENEFACTORS.

Hence, that FORM which lessens, prevents, or turns into a good, the evil effects of the former, and which gives the latter the greatest power of action, is evidently the most eligible: provided the *utility* of the road be not injured, or its *wear* increased, by such a form.

THE PERFECTION of a road, with respect to UTILITY and WEAR, consists, as has been shown, in its *surface* being even, firm, and elastic; the interstices of the hard materials being filled, and their points sheathed, with finer matter: provided its *form* be that in which

which its utility is greatest and its wear the least.

The state of **PERFECTION** of a road, as to **FORM**, that in which its utility is the greatest and its wear the least, is, beyond all argument and doubt, the state of perfect *flatness*\*: provided the **SURFACE** could be kept in the state of perfection, under that form.

But it being, in practice, **UTTERLY IMPOSSIBLE**, as appears demonstrably by the foregoing examinations, to unite the *perfection of surface* with *perfect flatness*, a more practical form must be sought.

In **HOLLOWNESS** we cannot hope to find it. It has been shown that a hollow road, by collecting the water which falls on the *slopes*, is worn into inequalities; part of the hard materials being carried off; and other exposed to unnecessary wear; rendering the surface unsafe, unpleasant, and injurious to the feet of animals; especially those of cattle; beside encreasing the resistance by hollows and protuberances; and thereby doubly encreasing the wear of the road: while the water

\* See *YORK. ECON.* v. i. p. 184.

water which falls on the *levels*, being unavoidably collected on the face of the road, the well known effects of standing water of course take place.

Thus, the great natural enemy of roads, RAIN WATER, instead of being curbed in its mischiefs, or converted to a friendly purpose, is, by HOLLOWNESS of form, left with full power of injury; while the WIND, their great natural benefactor, is, by this form, deprived of a considerable share of its power of relief: *dirt* and *dust*, equally, lie safe and secure at the bottom of the trough; which, instead of being kept free from *snow*, by the wind, is the first place filled: the wind, in this case, being changed into an enemy.

With respect to *snow*, the *flat* form is preferable to the *hollow*: though in most, if not all, other respects, as to utility of surface, flatness is the worst possible form. By increasing the hollowness of a wide carriage road, much beyond the utility of form, the margins might no doubt be brought into a travelable state; whereas, of a flat road, in a wet season, every part, from side to side, becomes equally untravelable: or, at best, altogether

together unfit to be travelled on and paid for.

Hence, it is sufficiently evident, that in **HOLLOWNESS** nor in **FLATNESS** can anything near perfection, in form and surface *jointly*, be found. In **ROUNDNESS**, alone, we can, therefore, expect to find it.

It is evident, to demonstration, that, by rounding up a road, above the utility of form, the evil effects of standing and running waters might be equally avoided; and the good effect of the waters of heavy showers, running from the crown to the sides, carrying down with them the soil, and leaving the sand and gravel behind, might be obtained.

Consequently the **UTILITY OF SURFACE** is obtainable, in roundness, to the required degree of perfection.

But perfection in the **UTILITY OF FORM** cannot be had in roundness; it belonging, exclusively, to flatness: in which, however, the requisite **UTILITY OF SURFACE** cannot be preserved.

Hence we may fairly, and safely, conclude, that perfect utility of surface, and perfect

fect utility of form are UTTERLY INCOMPATIBLE: the former, belonging solely to roundness, the latter exclusively to flatness.

Therefore, all that human art and industry can do is to endeavour to hit the happy medium: to lower the roundness until a degree of flatness be found sufficient to render the form, though not *perfect*, sufficiently *convenient* to answer, fully, the general intention: preserving a degree of roundness sufficient, when properly kept up, to secure it from the evil effects of standing and running waters: a happy medium, which, though seldom hit, is more or less observable, in every quarter of the kingdom.

The requisite degree of roundness varies with circumstances: depends on the given situation, the given materials, the width and the publicness of the given road. The steepes and levels, more particularly, ought to be kept as round as perfect conveniency will permit: for the quicker rain water escapes off the former, the less mischief it occasions; and the quicker it escapes off the latter, the more good.

Wherever

Wherever a road is observed to keep itself free from standing water and inequalities of surface, in a wet season; and this, where the form is not too round for the conveniency of top loads, every part of its surface being travelled over, the happy medium has been hit and preserved.

Roads bearing this test are proper subjects of study for roadmakers, rather than any theoretic rule that could be offered; except that roundness of form, let the material, the width, and the publicity be what they may, is requisite in all-seasons, and in all situations.

Because, under this form, heavy RAINS, instead of being injurious, become friendly to them: and though more moderate showers will, in despite of art and attention, be caught, more or less, by the lateral ruts; yet being exposed to the full effect of the WIND, their mischief is of short continuance; and the wind continuing, until a state of dryness takes place, its effect becomes similar to that of heavy rains; carrying off the soil; leaving the sand and  
afford



gravel to guard the hard materials, and to afford a surface, safe and pleasant to the traveller, and friendly to the feet of tender-footed animals.

On dry snow, the wind acts in the same manner as on dust: the crown of a round road is among the last places covered, and the first bared, in a snowy season.

These being the principal facts and reflections that have occurred to me respecting the forms of roads, I put an end to this long, and to myself at least, tiresome article; which nothing but a desire of placing an important subject in a just light, could have induced me to have begun.

I confess, however, that I do not regret the attention I have bestowed upon it; as the studying and digesting of it have brought to light truths, which otherwise I might not have seen, and which serve to establish still more firmly, than those I had hitherto adduced, the superiority of the CONVEX PRINCIPLE;—of roads moderately round, with a free open channel on either side as a horse path; with banks level on the top, as guards to the paths, and as resources, in wet weather, for footpassengers; and, where the width of

the lane will permit, with a side road for summer travelling.

By giving this form to roads, and by preserving it with due attention, so as to keep the surface free, as possible, from water, and, in a continuance of wet weather, from a superfluity of reduced materials; and by paying proper attention to the side roads;—I am clearly convinced that a very considerable proportion—perhaps one third—perhaps one half—of the money now expended on the roads of this kingdom might be saved.

And although the whole of the expence of roads does not fall on the farmer; yet, considering the toll he pays, in addition to the labour, or the rate, he is obliged to furnish, the principal part of it may be said to fall on the occupiers, and of course, eventually, on the owners of lands; a fact which will fully apologize, I hope, if any apology be required, for the length of these observations.

For an instance of a rough sandy road being smoothed at a small expence, see MIN. 71.

## FENCES.

5.

F E N C E S.

IN A COUNTRY which, for some time past, has been changing from an open to an inclosed state, we may reasonably expect a degree of excellency in the art of hedge planting. It seldom happens that, under such circumstances, the art remains in a state of obscurity; but that the prevailing mode of execution is adapted to the given soil and situation.

This, however, is not invariably the case: in similar situations, on similar soils, and under similar circumstances, we find very different modes of performing the same operation: a proof that the rural arts are either very abstruse, or are not universally studied with due attention.

In Norfolk, where a deep free subsoil prevails, we see hedgewood planted by the side of a deep ditch, and perhaps near the top

of a high bank ; and this notwithstanding the substrata are naturally absorbent or dry. While in this district, likewise having a deep free soil and subsoil, the plants are laid into a flat broad low bank, with a narrow shallow ditch ; a mere trench ; and this notwithstanding the substrata are, in a manner invariably, retentive or wet ; and the surface waters, of course, have no other way of escaping, than by means of deep ditches. In a recently inclosed common field, I have seen ditches a foot deep, with water standing in the furrows, hard by, not less than fifteen or eighteen inches deep !

This error in practice, however, is rather detrimental to the lands, than to the hedges ; which, in this district, are above par ; and their treatment, of course, requires attention.

The useful ideas, collected in this case, fall under the heads,

Raising new Hedges ;

Treatment of grown Hedges.

RAISING NEW HEDGES. The *species of hedgewood*, whitethorn, with some instances of

of crabtree \*. At present, however, "garden quick" may be said to be the universal hedgewood; although there was, within the memory of many men, no such thing in use.

The rejection of nursery plants, however, did not proceed from ignorance in the method of raising them, but from principle, founded on a false notion that plants, pampered in the rich soil of a garden, were of course improper to be planted in a ditch bank of common earth. No, no; the planters of those days knew better. "Gather them in woods, where they have been exposed to hardships, and have learnt to live upon coarse fare, and, in that case, when they come to be transplanted into hedges, they *must* thrive."

A gentleman near Tamworth was the first who ventured to plant garden quick on a large scale; and his success ruined the *business*,

G 3

*ness,*

\* HOLLY HEDGES. In this district I observed a natural holly hedge flourishing, as a fence against every thing, under very low-headed spreading oaks: an evidence of what might be expected from holly hedges under oaks properly trained,

*nefs*, as it had long been, of quickgathering. The quantity now raised, at Tamworth and its neighbourhood, for the Birmingham and other markets, is extraordinary. It is mostly transplanted. Its price, even at Tamworth, seven shillings a thousand: at Birmingham eight to ten shillings: yet at those prices one gardener sells, even when no public inclosures are going forward, three or four hundred thousands annually.

The most judicious planter I met with in the districts, and from whom, with the gardener here alluded to, I had these particulars, chuses his plants at four years old, transplanted at two; and cares not how rich a soil they are raised in.

The *time of planting*, here, is not unfrequently autumn. I had an opportunity of making a comparative observation, on a neighbour's practice, between plants set in autumn, and others planted, in continuation of the same hedge, in spring. The autumnal planting, *in this case*, had a decided preference. But the situation was somewhat dry; and the spring and summer proved so likewise:—under these circumstances autumnal planting will generally succeed best,

The

The *method of planting* has been said to be that of putting the plants into a broad flat mound : generally planting *two rows*, ten or twelve inches apart, and a similar distance from the brink of the trench, by the side of which they are planted.

The reason given for this mode of planting is, that a deep ditch makes a high heavy bank, and this “overloads the roots.”

There is, no doubt, some truth in this reasoning. Plants never thrive so well as on level ground, provided they are not incommoded by standing water: see YORK. ECON.: and the disadvantages of a high heavy bank have been pointed out in the NORF. ECON.: but it is a fact, evident in various parts of the kingdom, and particularly in my own practice in three different and distant parts of it, that hedges may be raised with success in the front of a high bank; and that its disadvantages are by no means equal to the advantage gained by a deep ditch and high bank, as a defence to the rising hedge.

Two rows of posts and rails are here the common guard: incurring an expence equal to twice that of a deep ditch

and banklet on one side, and a high bank and hedge on the other. If the hedge be planted behind a shelf of sufficient width, and part of the mould of the ditch be applied in forming a banklet on its outer brink, the load incurred by the remainder is little, if any, impediment to the progress of the young hedge.

For the method and expence of planting a hedge in this manner, See MIN. 123.

The *nursing* of young hedges, a business which, in most parts of the kingdom, is in a manner totally neglected, is in many cases well attended to here. They are pretty generally weeded, and, in some instances, hoed : in others, however, they are here, as in other places, seen struggling among weeds ;—principally of the following species.

I enumerate them here, as I paid more attention to hedgeweeds in this, than in any other, district : and though they vary, in some degree, in different places, they are, upon the whole, very much the same in all.

#### HEDGEWEEDS



HEDGEWEEDS of the MIDLAND DISTRICT.

*Weeds of young Hedges.*

Couch grafs and other graffes \*.

The thistles, particularly the spear thistle ;

The docks ;

The nettle ;

Sowthistles ;

Hawkweeds ; and a variety of small weeds, which rob the plants of their nourishment, and ought to be cut off with the hoe, so often as they rise.

The convolvulus ;

The blue-tufted vetch, and other vetches ;  
and

The cleavers, and other climbing plants, are a burden to the taller more upright shoots.

In low moist situations,

The meadow sweet ;

The

\* I have seen, in this district, quick planted, across a foul arable inclosure, in a bed of couch ! Nothing can be greater folly. The other graffes may be destroyed with the hoe ; but scarcely any art can free young hedge plants from couch ; which ought, at any cost, to be destroyed before the hedge be planted.

The wild angelica ;

The willowherbs (epilobia) ;

The perficarias, &c. &c. are almost certain suffocation to weak plants, the first and second years, if not repeatedly removed by hand, so often as they threaten the injury of the infant hedge.

*Weeds of older Hedges.*

The briar ;

The bramble ;

The woodbine ;

The bitter-sweet (solanum dulcamara) ;

Black briony (tamus communis) ; and in some places, the white briony (bryonia alba) ; and the

Traveller's joy (clematis vitalba) ; are very destructive to hedges ; especially if suffered to grow up with them, either in the first instance, or after the hedge has been cut down.

They ought therefore, in both cases, to be eradicated, or at least cut out and kept under, until the hedge be free from injury.

THE TREATMENT OF GROWN HEDGES.  
*Plasbing* may be called the universal practice of this district. Nevertheless, I have observed a few instances of cutting hedges,  
that

that do not come within the description of plashing.

In this practice; one row of stems, if double quicked, is cut to the stub, the other, hedge height; not level off, or all of the same height, but in such a manner as to lean back, away from the stubs of the fallen row; cutting those which stand foremost the lowest, and such as lean or branch away from them, the highest; leaving the back spray on, to form a blind, and assist to make a fence.

Under this management, two rows of quick are evidently preferable to a single row; for although I have seen single quick treated somewhat in this manner, especially in Derbyshire, the effect is very different. In this case the stools and the stems are fed from the same roots; the same set of fibres; and the stems with the spray left upon them, rob the lower shoots, from which the new fence is to rise, of a great part of their sap. While in the other, the stools not only stand distinct from the stems, but have a distinct set of roots to support them, entirely independent of the stems left standing as a temporary fence,

The

The *methods of plashing* are various: the old and still most prevailing method is to

leave part of the stems standing, as “live stakes”; between which the plashers are interwoven, in the usual manner.

Judicious managers, however, object, and with good reason, to live stakes; which, throwing out spreading heads, in the pollard manner, overhang and destroy the plashers, and prevent the shoots of the stools from rising: consequently tending to convert the hedge into a row of thorn pollard; in which state old hedges, that have been thus treated, are too evidently seen. On the contrary, when the entire hedge is cut down, or crippled as plashers, to the stub, the plashers have no impediment, and the young shoots are the less incommoded in as much as the plashers shoot less luxuriantly than the stakes. Still, however, the shoots from the stools, the only offspring of the old hedge from which a new one can be expected, are greatly injured by the plashers overspreading them.

Hence an improvement has been struck out, in this district, which probably raises the art of plashing to its highest degree of

of perfection. This is effected, by driving the dead stakes, not in a line with the stubs, but some foot or more behind them, and by winding the plashers among them, and eddering them, according to the custom of this country, with brambles, leave the shoots from the stubs the same air and headroom, or nearly the same, as if the whole were cut down, and a dead hedge raised behind them.

The advantage of this method of plashing, compared with the practice of felling the whole to the stub, is, that a live hedge, which improves by age, is raised, instead of a dead one, which grows worse every year. The disadvantage, that of part of the sap (of single hedges) being drawn away from the young shoots; which, in this case, are left less free and open, than when the whole of the stems are cleared away at the stub.

However, where there are a sufficiency of young pliable stems for plashers, and the ditch does not require much repair, the plashing here described may have, upon the whole, the preference; especially if the plashers, when the young hedge has got up, be removed from their interference with the upright shoots.

But,

But, where the hedge has been neglected, the stems are grown few and large, particularly where vacancies require to be filled up by layers or otherwise, and the ditch requires to be new made,—felling to the stub is indisputably preferable.

It is observable, however, that in the district under survey, the ditch is rarely remade, and but seldom scoured: even where the soil is retentive; and a ditch, of course, necessary to good management.

The *reasoning*, in this case, is the same as in that of planting by a narrow ditch: namely, the fear of “overloading the roots!” In that case there may be some shadow of truth; but in this, in which the roots are feeding several feet from the bank, there is probably not the least foundation. The practice, no doubt, originates in indolence or false economy.

This censure, however, is not intended to be passed indiscriminately. There are many individuals, who are aware of the utility of open ditches, in freeing their lands from surface water.

#### REFERENCES

## REFERENCES to the MINUTES on FENCES.

- For the principles of *Gatehanging*, see MIN. 36.  
 For observations on making *Sodbanks*, see MIN. 49.  
 For further observations on *Hanging gates*, see MIN. 54.  
 For an instance of practice in *Hedgeplanting*, see MIN. 123.  
 For a proof of the nuisance of *wide hedges*, see MIN. 131.  
 For observations on water standing against *live hedges*, see MIN. 132.  
 For remarks on the *weeding of hedges*, see MIN. 152.  
 For observations on the nature of the root of the *hawthorn*, and on *rippling hedge banks*, see MIN. 159.  
 For a proof of the nuisance of *high hedges*, see MIN. 160.  
 For further Observations on *high hedges*, see MIN. 161.  
 For the probable origin of *crooked hedges*, see MIN. 162.

## HEDGEROW

## 6.

## HEDGEROW TIMBER.

FEW DISTRICTS are so thin of hedgerow timber as this. The old enclosed townships have a tolerable share, but the new inclosures, which, with the open fields that yet remain, constitute a principal part of the Midland District, are as naked, to the distant eye, as the downs of Surrey, or the wolds of Yorkshire. LEICESTERSHIRE, more particularly, stands in this predicament. There is not, speaking generally, a young oak in the county. If this error should not be rectified, there may not, in half a century, be a tree left in a township.

This poverty in hedgerow timber has probably arisen, partly in neglect, but much more in a rooted antipathy, among occupiers, against trees in hedges. The mischiefs of the ash and elm, and low spreading oaks, having been experienced, all species have been indiscriminately proscribed.

The



The ash, the elm, and lowheaded oaks, are indisputably mischievous in hedges—injurious to the occupier, and destructive to the hedge.—But oaks trained in the manner which I have repeatedly recommended \*,—while they enhance, in a very high degree, the value of an estate, do, comparatively, little injury to the occupier, and but very little to the hedge.

THE DISTRICT of the STATION furnishes an instance of the latter part, at least, of the above assertion. The road through an entire township (I believe)—Grindon—the residence of Lady Robert Bertie—has on each side of it a line of tall stemmed trees, mostly oaks, rising in a trimmed hawthorn hedge; which, far from being destroyed by them, flourishes with extraordinary vigour; closely embracing the stems of the trees; a fence against any thing.

The lowheaded *pollard* is seldom seen in the hedges of the old inclosures of this district; which, however, sometimes exhibit a still more awkward object: a kind of tall, and mostly crooked stump—a something between

\* PLANTING and ORN. GARD. and NORF. ECON.

tween a tree and a pollard;—with frequently a single small bough, left on *one side* of its top! as if the owner, having repented of his folly, were endeavouring to convert the *object* into a tree again.

For the method of taking down, &c. see the next article.

For an instance of practice in *training* hedge oaklings, see MIN. 155.

## 7.

## WOODLANDS.

VIEWING THE MIDLAND COUNTIES generally, they are still sufficiently wooded; although there has, within memory, been an undoubted decrease.—Charnwood Forest has not, figuratively speaking, a stick left in it; though, within the present century, much of the ancient forest remained. Many smaller plots of woodland, and townships of well wooded hedges, have been cleared away, within the last fifty years.

There

There is little danger, however, of the district suffering through a want of TIMBER.—WARWICKSHIRE, STAFFORDSHIRE, and DERBYSHIRE, are still fully wooded; LEICESTERSHIRE, with the private woods scattered round the skirts of the forest, and on the borders of RUTLANDSHIRE, has yet a sufficiency left to supply its internal consumption.

But with respect to COPPICE WOOD, many parts of Leicestershire, more particularly, must even now feel a want, and experience many inconveniencies, which a distribution of coppices would remove. It is true, that many of these woodless parts are too valuable, as grass or arable land, to be converted, on a large scale, into coppice grounds. Nevertheless, there are, in most townships, cold patches of soil, less productive of corn and grass, and angles in the outline of every estate, which might be profitably planted with coppice wood.

The DISTRICT of the STATION is in a manner surrounded by woodlands, and, during my residence in it, I collected, through this and other circumstances, more information respecting their management, than in any

other I have resided in. The subject, therefore, requires, in this place, especial attention.

The information obtained classes under the following subdivisions :

- |                 |             |
|-----------------|-------------|
| 1. Raifing.     | 4. Timber.  |
| 2. Selling.     | 5. Bark.    |
| 3. Taking down. | 6. Coppice. |

I. RAISING. It is more than probable, that most of the private woods, which we see, at present, scattered over the island, have been raised by art ; and that they are not, as they are generally supposed to be, remnants of the ancient forests, or native woods.

In the old woods of this quarter of the kingdom, it is pretty generally observable, that the north and eastern margins abound with ash, while the body of the wood is principally oak ; and it is believed that the ash, being a quick-mounting tree, was propagated there as a screen to the oaklings \*. This is a circumstantial evidence of their being raised by art : while the *evident vestiges of the plow*, in other instances, are proofs of the position ; at least as to these instances.

But

\* But see MIN. 166.

But the practice of PROPAGATING WOODLANDS (I mean ordinary woodlands of oak, ash, or other native woods) can be traced by circumstances only, in every part of this island I have observed in, excepting NORTH WARWICKSHIRE ; where the practice may be said to be at present in use. Several young woods are now getting up from acorns and other tree seeds, sown by the hands of men now living. Yet their appearance to the eye, on the closest examination, is the same as that which we observe in cases where the proof is less positive.

THE MODE OF PROPAGATION is that of sowing acorns, keys, &c. with the seeds of corn ; or of dibbling them into grassland ; as will more fully appear in MIN. 124.

II. SELLING TIMBER TREES. The present mode of disposal is by auction,—as it stands :—a mode always to be recommended, for reasons already given. See YORK. ECON. i. 241.

The method of VALUING timber. The only circumstance which requires to be mentioned, here, is that of valuing the timber and bark separately ;—keeping two distinct accounts. This is done by the timber mer-

chant when he sells the bark to the tanner by such valuation: a practice which is not uncommon: the tanner, of course, making his counter valuation of the bark only. Vague as this mode of valuation may seem, and various as the proportions between the timber and the bark of different trees really are, there are men, accustomed to this mode of estimation, who, it seems, will come very near the truth.

For instances of the mode of disposal,—conditions of sale, &c. see the MINUTES referred to below.

III. TAKING DOWN TIMBER TREES,  
Three methods of felling are here in use:

Stocking,

Axe-grubbing, and

Axe-falling.

STOCKING (a provincial term for grubbing, or digging with a mattock, &c.) is a kind of partial grubbing. The roots are cut through, a foot or more from the stem; and, again, a foot or more from the inner cutting; taking up a short length of the thickest part of the roots, and digging a trench round the tree, wide enough to come at the downward roots,

AXE-

AXE-GRUBBING is similar to the Norfolk *grubbing* (see NORF. ECON.), only the end of the but is left larger here than in Norfolk.

AXE-FALLING is the common method of Yorkshire and other places, of cutting off, aboveground, with the axe:—a method which is seldom practised; except in some few cases, where another crop of timber or coppice wood is intended to be taken.

Stocking is the prevailing method;—the PRICE FOR TAKING DOWN varying with the size of the tree: for a tree of two feet diameter, the price is about a shilling; and about four pence more for cutting off the but; the stocking and butting being generally let together.

PEELING BARK. The *Peeling Tool* commonly made use of, here, is of *bone*. The thigh and the shin bone of an ass are preferred. The former (a two-handed instrument) for the stem and the larger boughs; the latter, for the smaller branches. The handle, a crutched piece of wood, fixed in the end of the bone. The point once given, by the grinding stone, or a rasp, keeps itself sharp by wear.

The ARMS or BOUGHS are cut up into *pofts*, *rails*, and "*cordwood*," for CHARCOAL. The price for cutting and setting up cordwood is about two shillings a cord of "*yardwood*." A "*statute cord*" measures four feet high, four feet wide, and eight feet long. But four feet lengths being inconvenient to the charcoal burners, it is generally cut into lengths of three feet; consequently a cord of yardwood is only three fourths of a statute cord\*.

The SPRAY is generally formed into fagots, provincially "*kids*,"—the price for "*kidding*" a shilling a load of sixty kids; or, if the workman finds bindings, fifteen or sixteen pence a load.

IV. TIMBER. The consumption of the timber grown in this central part of the island (excepting the Banks of the Trent) falls chiefly among inland dealers..

In a maritime country, the trees are carried bodily to the ship yard: here, they are mostly divided, in the places of their growth, into a variety of wares; hence, the business  
of

\* The STATUTE CORD of this country, therefore, agrees pretty nearly with the STACK of the southern counties; though their dimensions are very different.



## 7. MIDLAND COUNTIES. 105

of cutting up—provincially and properly termed “converting” timber,—is, here, conducted in a superior manner; a quick judgment of the proper wares, into which a given tree ought to be converted, requiring much practice.

The wares, into which the timber of this neighbourhood are converted, will appear in the MINUTES.

V. BARK. Oak bark is disposed of in two different ways: one of them peculiar, perhaps, to this district; in which, as has been said, it is sometimes valued upon the tree; the wood merchant carrying on two valuations; one of the timber, the other of the bark; selling it to the tanner, who likewise makes his estimate, by the lump.

The other mode of disposal is the common one of selling it by the ton, in the rough: the method of weighing it, or rather of estimating its weight, is, however, noticeable. The bark having been set up in the usual manner, but with more than common care as to evenness of quantity, against horizontal poles or treffels; and having stood some nine or ten days, more or less, according to the weather, until it be fit to  
carry,

carry, the buyer choofes one, two, three, or a greater number of yards in one place, and the feller a like number in another. Thefe yards of bark are weighed, and the reft meafured and eftimated accordingly\*.

VI. COPPICE WOOD. The two principal coppices, of the Diftrict of the Station, are thofe of Seal and Hopwas; the former in Derbyshire; the latter in Staffordshire.

The *age* at which coppice wood is cut in this part of the kingdom varies much with the intended ware. For *pofts*, *rails*, and *coal-wood*, twenty years or upward are requifite to bring the wood to fufficient fize. But for the fmaller wares, into which the produce of the coppices of this neighbourhood are chiefly converted, they are felled much oftener.

The prevailing wares are *flakes*, *edders*, *burdles*, *brooms*, and *cratewood*; the laft a fpecies of coppice ware I have not met with before; but which is here a confiderable article: the Staffordshire potteries working up no fmall quantity of wood in making their various packages.

In

\* The fame eftimation being taken by the tanner and the peelers.

In this quarter of the island ; especially on the Staffordshire side of the district ; where iron forges abound, CHARCOAL becomes an object of considerable magnitude to the woodman. I had an opportunity, here, of paying close attention to the process of burning it ; as will appear in the MINUTES.

For the practice and profit of *cultivating oak woods*, see MIN. 124.

For instances of neglect in the *training of young oak woods*, 125.

For instances of *oak woods* being disfoliated by the *chafer*, see MIN. 126.

For the process of making *charcoal*, see MIN. 127.

For remarks on *seedling oaks* rising spontaneously in grassland, see 128.

For further obs. on the *chafer*, 129.

For the consequent *appearance* of the oak, see MIN. 130.

For obs. on the *growth* of the *ash*, 133.

For obs. on the *growth* of the *elm*, 134.

For obs. on the *growth* of the *poplar*, 135.

For an account of the *sale* of Merevale timber, see MIN. 136.

For obs. on the *rise of the sap* in old timber oaks, see MIN. 137.

For

For the *sale* of Weeford Park timber, 138.

For the *sale* of Statfold oak timber, 139.

For obsf. on the time of *felling* oak timber,  
140.

For remarks on the "*lag*" in timber, 141.

For further obsf. on the *rise of the sap* of  
oaks, see MIN. 142.

For obsf. on the method and caution in *felling*  
timber, 143.

For remarks on *tapping* oaks, 143.

For remarks on *training* timber, 143.

For general obsf. on the *age of timber trees*,  
see MIN. 144.

For the method of *falling* trees with  
wedges, 145.

For further obsf. on the *chafer*, 147.

For remarks on the timber of *Needwood*  
*Forest*, &c. and on the *age* of oak timber,  
149.

For a description of the *Svilcar oak*, &c.  
149.

For an instance of the *oak* being injured by  
an *insect*, see MIN. 150.

For farther obsf. on *charcoal*, see MIN. 151.

For reflections on the *decline of oak timber*,  
see MIN. 154.

For

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For farther obs. on the *cultivated woodlands* of North Warwickshire, see 156.

For remarks on *hanging woods*, see MIN. 157.

For an evidence of the experience requisite in the business of *converting* timber, 158.

For remarks on the advantage of woods on *rock*, see MIN. 158.

For the *sale* of Statfold ash and elm, 163.

For remarks on adapting perennial plants to soils and situations, 164.

For instance of practice in *converting* oak timber, 165.

For remarks on the *age*, &c. of ash and elm, 166.

For a description of the *Middleton oak*, 167.

PLANTING

## 8.

## P L A N T I N G.

THE ART OF PLANTING is separable from that of raising woodlands in a more natural and simple way, immediately from the seed. This is a summary operation, like that of sowing a crop of corn, or laying down land with grass seeds. The other a progressive work ; consisting of various nice and difficult operations ; both in the NURSERY and in the PLANTATION. Nevertheless PLANTING is, at this day, the prevailing mode of propagating trees ; whether for USE or for ORNAMENT.

With a view to mere utility, however, PLANTING, except in HEDGEROWS, can rarely be adopted with propriety. But where ornament is a joint, or the principal object, planting is in most cases eligible.

It is not my intention to introduce the subject of RURAL ORNAMENT, in a work of  
RURAL

## 8. MIDLAND COUNTIES. 111

RURAL ECONOMY. Nevertheless, the ART OF PLANTING, which is applicable, on many occasions, to USE as well as ORNAMENT, is professedly a branch of the present work.

Planting is indeed an art to which I have long been partial, and on which I have, at different times, bestowed considerable attention.

Some years ago, I digested my ideas on the subject, and revised them, in the press, during my residence in this district \*.

Warm with the subject, and wishing to extend my practice, I undertook, while I was *improving* this estate, to *ornament* it.

How far I have succeeded, the place itself must speak. What I purpose to convey in these volumes are some practical observations ON PLANTING: an art which my success has led me to believe I have in some measure advanced.

But these remarks being on my own practice, they will appear with most propriety in the second volume. See the MINUTES referred to below.

The

\* See PLANTING and ORNAMENTAL GARDENING, a Practical Treatise; in one volume octavo.

The plantations of this district are few, and afford little information on the subject.—Excepting those at FISHERWICK, done under the direction of the late Mr. BROWN, few have succeeded well. But, in every part of the island, we see similar miscarriages in planting: a proof that the art is not generally understood, or not sufficiently attended to.

The only circumstance that requires to be noticed, respecting the practice of planting in this district, is that of the nurseryman's *insuring* the plants the first year. That is, if they do not grow, he furnishes his customers with fresh ones in their stead: and this whether he plants them himself, or leaves it to others to put them in; provided that in the latter case they follow his directions.

This practice, I understand, was first established by a nurseryman of Coventry; but has since, through a kind of necessity, been adopted by other nurserymen.

Where the nurseryman is employed to put in his own plants, this is a *reasonable* practice; but, when we consider how much depends on the operation of planting, it can scarcely be



8. MIDLAND COUNTIES. 113

be deemed such to insure the success of others.

For a detail of my own practice in the spring of 1785, see MIN. 146.

For instances of the want of success in planting in the dry spring of 1785, see MIN. 148.

For farther remarks on my own practice in 1785, see 153.

For remarks on the advantage of planting steep slope, see 157.

For a detail of my own practice in the autumn of 1785, and the spring of 1786, see MIN. 168.

## 9.

## F A R M S.

THE SIZE OF FARMS, throughout the MIDLAND DISTRICT, is large, considering the quality of the soil.

THE DISTRICT of the STATION contains some capital farms. *Bramcot, Pooley, Alncot, Amington, Sierfcot, Hogsbill, Dunnimeer, Statfold, Thorp, Seckington, &c. &c.* lying immediately in *this* neighbourhood, rank among the first class of farms in the kingdom. Most of them three to four or five hundred acres of land, worth twenty to twentyfive shillings an acre.

These farms are situated in the old inclosed parts of the district. How they have been aggregated to their present size is not obvious. Probably, they have never been in the state of common field. Formerly, much of them lay in large — “feeding pieces”—grazing grounds—of fifty or sixty acres each. This accounts for the present straightness of many  
of

of the hedges. Some of them are extraparo-  
chial; and may be subdivisions of town-  
ships given, by the feudal lords, to their de-  
pendants. This, however, by the way.

The CHARACTERISTIC OF FARMS varies  
of course with their state as to inclosure.  
The open township, as well as those which  
have been recently inclosed, are mostly in a  
state of aration.

The farms of the older inclosures, of which  
only I shall speak, are much of them in grafs;  
being subjected, in the manner which will  
be shown, to an alternacy of grafs and arable.

## 10.

### F A R M E R S.

EVERY DISTRICT has its leading men;  
its "capital farmers:" their proportionate  
number varying, in some degree at least,  
with the size of farms prevalent within it,  
and the state of husbandry at which it has  
arrived.

These men consist either of TENANTS, whose fathers, having profited by their good management, have left their sons sufficient capitals and knowledge to increase them; or of the superior class of YEOMANRY, cultivating, in continuation, their paternal estates.

This class of occupiers have many advantages over the lower orders of husbandmen. They travel much; especially those whose principal object is livestock. They are led to distant markets, and perhaps to the metropolis. They see, of course, various modes of management, and mix in various companies: consisting not merely of men of their own profession: men of fortune and science have, of late years, admitted them into their company: and to their mutual advantage.

Thus their prejudices are worn off, their knowledge enlarged, and their dispositions rendered liberal and communicative, in a degree which those, who have not mixed and conversed freely with them, are not aware of.

The MIDLAND DISTRICT may boast of a greater number of this description of men,  
than

than any other I have yet been over; and we may, I apprehend, venture to add without risque, than any district of equal extent in the kingdom. It is not only a large-farm and grazing country; but the spirit of breeding, which has gone forth of late years, has infused an ardour and exertion among them, unobservable in other districts. Except in Yorkshire, I have found the SPIRIT OF IMPROVEMENT nowhere so high.

Besides these, many of the MIDLAND FARMERS have had other two, great advantages, of which farmers in general are in want.

Formerly, and still in many districts, yeomen and farmers, who were able and willing to educate their sons, did it solely with a view to fit them for trade, or enable them to follow one or other of what are emphatically termed the *professions*. Being educated, they were of course incapacitated for farmers!

Not so, however, in this country. There are men, now at the middle age of life, who have had a regular SCHOOL EDUCATION; and who, instead of being sent out of the country to a trade, or a "profession," have been

placed as PUPILS, with superior farmers, at some distance from their fathers' residences. Thus not only improving their knowledge by a double tuition, but breaking off, in their tender state, those attachments to customs, right or wrong, which those, who have seen only one mode of management, are too liable to form.

Hence, we find this description of men not only ADOPTING such IMPROVEMENTS as have gained a degree of establishment, but striking out others by EXPERIMENT, and still farther enlarging their ideas by READING: and this with little danger of being misled. Their judgements are in a degree formed. They have a basis to build on.

Among the rising generation, and in a very few years, we may expect to find numbers of this class of occupiers. Almost every substantial farmer, now, educates his sons, and brings up one or more to *his own profession*.

If ever agriculture be brought near to perfection, this is the class of men who must raise it. MEN OF FORTUNE may, and ought for their own interest, to *encourage* and *promote*, for with them, eventually, center the profits

profits of improvement. But the SUPERIOR CLASS of PROFESSIONAL MEN must *suggest* and *execute* \*.

With respect to the LOWER CLASSES of HUSBANDMEN, who form the main body of occupiers, their business is to *follow*: and, if the men, whom they are in the habit of looking up to, lead the way, though it may be slowly, they are sure to follow.

Thus improvements, struck out and effected, by the superior class of professional occupiers, are introduced into common practice; while those of unprofessional men, if they merit adoption, die for want of being properly matured; or, if raised into individual practice, seldom become serviceable to the community at large.

The great bulk of occupiers consider every man who has not been bred up in the habits

I 4

of

\* By PROFESSIONAL MEN, I do not mean those, only, who have been bred up to husbandry from their youth. There are men, in every quarter of the kingdom, who, having attended *personally, and closely*, during a course of years, to the *minutiae* of husbandry, *as a profession*, are of course become PROFESSIONAL: and many MEN OF FORTUNE, who, having paid a similar kind of attention to PRACTICE, have acquired, of course, a similar kind of PRACTICAL KNOWLEDGE.

of husbandry, or enured to them by long practice, as a visionary; and are more inclined to sneer at his plans, than adopt them, though ever so excellent.

Hence, probably, the inefficacy of the numerous SOCIETIES of agriculture, which have been formed, in various parts of the kingdom. There is only one, that of BATH, which, from all the information that has come within my knowledge, has been in any considerable degree successful; and the success of this, probably, has been, in some degree at least, owing to the professional men who belong to it.

Societies formed of PROFESSIONAL MEN, encouraged and assisted by the LANDED INTEREST, could not fail of being beneficial, in promoting the rural affairs of these kingdoms; and the MIDLAND COUNTIES, whether from centrality of situation, or from the number of superior managers in it, are singularly eligible for such a society.

But SOCIETIES, on the plan which has hitherto been adopted, though they were to be formed of professional men under the patronage of the landed interest, would still be, in their nature, little more than *theoretical*.



*cal.* Mere societies want the *subject* before them. Their most probable good effect could be that of assimilating, by frequent meetings, the sentiments of the PROPRIETORS and the OCCUPIERS of lands: thereby encreasing the necessary confidence between them; and thus far, of course, becoming essentially serviceable to their common interest. But they fall far short of being the most eligible institutions, for the advancement of rural knowledge.

In the Digest of the MINUTES OF AGRICULTURE, on the subject PUBLIC AGRICULTURE, I proposed an establishment of AGRICULTURAL COLLEGES, to be distributed in different districts, as SEMINARIES of RURAL KNOWLEDGE.

It is now more than twelve years since that proposal was written, during which time my attention has been bent, unremittingly, on rural subjects: and the result is, that I now see, still more evidently, the want of RURAL SEMINARIES.

The seminaries there proposed are, however, on too large a scale for any thing less than NATIONAL establishment; and COMMERCE, rather than AGRICULTURE, appears to engage,

engage, at present, the more immediate attention of GOVERNMENT; and this notwithstanding the present scarcity of corn is such, that we are asking, even the AMERICANS, for a supply; and notwithstanding a very considerable part of the CATTLE, which now come to market, are the produce of IRELAND. See MIN. 122.

I have already said, in the course of this work, that it is not my intention to obtrude my sentiments, unseemingly, on NATIONAL CONCERNS; but possessed of the mass of information, which, in the nature of my pursuit, I must necessarily have accumulated,—no man, *perhaps*, having had a similar opportunity,—I think it a duty I owe to society, and an inseparable part of my present undertaking, to register such ideas, whether national or professional, as result, aptly and fairly, out of the subject before me: and, in this place, I think it right to intimate the probable advantage which might arise from a BOARD OF AGRICULTURE;—or, more generally, of RURAL AFFAIRS; to take cognizance, not of the state and promotion of AGRICULTURE, merely; but also of the CULTIVATION OF WASTES and the PROPAGATION OF  
TIMBER;

**TIMBER** : bales, on which, not commerce only, but the political existence of the nation is founded. And when may this country expect a more favourable opportunity, than the present, of laying a broad and firm basis of its future prosperity ?

The **ESTABLISHMENTS**, I am now about to propose, might be formed by **INDIVIDUALS**, in various parts of the kingdom ; and might readily be raised into **PRACTICE**.

The **SITUATION** of an establishment of this nature ought to be (though not necessarily) upon a considerable landed estate ; as five thousand acres of tolerable soil.

The immediate **SITE** might consist of five hundred acres, more or less ; laid out into **TWO FARMS**, or general divisions ;—the one **ECONOMICAL**, the other **EXPERIMENTAL** \*.

The **ECONOMICAL** division to be established, in the outset, on the best practice of the district it may lie in ; and to be conducted

\* If the **MANAGEMENT OF ESTATES**, including **PLANTING**, **RURAL ARCHITECTURE**, &c. &c. should form parts of the establishment, an **ESTATE** would be in a degree requisite. But, if it were confined to **AGRICULTURE**, solely, a **FARM**, only, would be wanted.

ducted on the most rigid principles of pecuniary advantage.

The EXPERIMENTAL part to be appropriated, chiefly, to HUSBANDRY, with a compartment for PLANTING, and another for BOTANY.

The part appropriated to PLANTING to consist of a NURSERY GROUND, and such corner or screen PLANTATIONS, as may be wanted for the use of the estate: the intention being that of making experiments on the propagation of WOODLANDS and HEDGES; as well as that of raising NEW VARIETIES of trees and hedgewoods.

The BOTANIC GARDEN to receive a collection of NATIVE PLANTS, as well as of the several VARIETIES of CULTIVATED PLANTS, whether native or exotic: its intended use being that of a SCHOOL of BOTANY; as well as that of raising NEW VARIETIES of the agricultural plants already cultivated; and of endeavouring to discover, among the uncultivated species, FRESH PLANTS, fit for the purpose of cultivation.

The rest to be appropriated to EXPERIMENTS in HUSBANDRY; on the several departments of the ARABLE and the GRASS-  
LAND

LAND management; as well as on LIVE-STOCK;—a most interesting subject of experiment; as will appear fully, under that head, at the close of this volume.

The use of this compartment requires not to be explained. It may, however, be proper to say, that the general intention proposes, as the main purport of the establishment, that, as an operation, a process, or a general principle, shall be fully *proved* by experiment (but not before, however *plausible* it may be in theory), it shall be transferred to the part purely economical, and be there *registered* as an IMPROVEMENT of the established practice.

The BUILDINGS of the two farms to be distinct. Those of the economical, the ordinary farm buildings which may be supposed to be on the premises. Those of the experimental to consist of

A FARMERY, or regular suite of farm buildings, on the best plan, and in the best style of rural architecture, at present known; endeavouring to unite, as far as situation and materials will permit, simplicity and convenience with cheapness and durability.

A REPO-

A REPOSITORY OF IMPLEMENTS, and MODELS of farm buildings, fences, gates, &c. Not the ingenious fabrics of theory; but such as are admitted into the established practice of the different districts of the island; or such as have been, otherwise, *fully proved*, by a continued course of practice: in order, that, by bringing the whole under the eye, regularly arranged and duly classed, their comparative merit may be more readily ascertained; and the judgement be, of course, assisted, in selecting such as may be best adapted to a given soil and situation. With a MANUFACTORY OF IMPLEMENTS; for the more easy dissemination of those which are already proved to be superiorly useful; as well as for the construction of such NEW IMPLEMENTS as invention may suggest. And with a TRIALGROUND adjoining; for the purpose of testing new implements (when no other ground may be at leisure), and for regulating, and setting to work, those to be transferred to distant districts; that less impediment may arise when they reach the intended places of practice.

AN EXPERIMENTERY, for analyzing SOILS and MANURES, investigating the VEGETABLE

BLE and ANIMAL ECONOMY ; and, generally, for the study of the more abstruse branches of the science.

A LIBRARY, for the reception of books on RURAL SUBJECTS ; as well as of those on every other subject, which may serve to elucidate RURAL KNOWLEDGE.

A LECTURE ROOM, for the purpose of instructing PUPILS in the PRINCIPLES of the RURAL SCIENCE ; whether they arise out of NATURAL or SCIENTIFIC KNOWLEDGE.

The PROFESSORS, requisite to such an establishment, would be a PRINCIPAL, to form and conduct, with such ASSISTANTS, as circumstances would readily point out, when the scale and the departments were determined.

But, Who would wish to have such an incumbrance upon his estate ? and, What individual would be at the expence of such an establishment ?

Such questions would be futile.

Rather let it be asked, Who would not wish to have the rural knowledge of the island collected upon his estate ? and, What liberal mind, especially if bent to agricultural pursuits, would not be gratified in seeing improvements, in the first art and science the human

human mind can be employed upon, growing daily under his eye? and, What man, who regards the interest of his family, would not wish to see the best cultivated farm in the kingdom upon his estate; and, of course, in due time, to be in possession of the best cultivated estate in the kingdom?

This, alone, might be a sufficient recompence for the original expence; which would, in all probability, be repaid, with still greater interest, by the PUPILS which such an establishment would, with a degree of moral certainty, draw together.

The present premium given with a farm pupil to an *individual*, varies with the ability or character of the tutor, and with the treatment the pupil expects to receive. The usual term is four years, and the premium forty to two hundred pounds. With the first, they are treated as a superior kind of *servants*; with the latter, as *assistants*.

What man, whether of the superior class of yeomanry or tenants, or of the superior class of tradesmen or others, who are now bringing up their sons to husbandry, would not, after his son had gone through a course of private tuition, and received the rudiments



ments of instruction, from himself or some professional friend, with to perfect his education in a public seminary ;—where he would have, not only an opportunity of seeing PRACTICE in its highest state of improvement, and of conversing with PROFESSIONAL MEN of the most enlightened understanding ; but where he would be duly initiated in the THEORY of rural knowledge : in the method of making, registering, and observing the result of EXPERIMENTS ; of ascertaining the natural qualities of SOILS and MANURES ; of improving the varieties of CULTIVATED CROPS, as well as of ascertaining the inherent qualities, and improving the various breeds, of LIVESTOCK ; where he would see order and subordination, and learn the proper treatment of SERVANTS ; and among a variety of other branches of useful knowledge, the form and method of keeping farm ACCOUNTS, and of ascertaining, with accuracy, the profit or loss upon the whole and every part of his business ; consequently, of bringing it as nearly, as in its nature it is capable of being brought, to a degree of certainty.

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And

And what possessor of landed property would not wish to have the heir of his estate initiated, at least, not in the management of ESTATES only, but in the proper management of FARMS; without a knowledge of which, no man can be a judge of the proper management of an estate: a part of education, as essentially requisite to an heir of landed property, as the acquirements of political knowledge are to the heir of a kingdom. Indeed, the more immediate happiness of a principal part of every nation depends rather on the possessors of estates, than on the possessor of the crown. And it is a fact incontrovertible, that, in either case, the respectability and personal happiness of the possessor will ever be reciprocal with those of *the people*; on which alone they can be built, with firmness and full security. Surely, then, a branch of knowledge, which naturally leads the possessor of a landed estate to live in the hearts of his tenants, can be no mean acquirement.

## WORKMEN.

## II.

### WORKMEN.

DAY LABOURERS may be said to be scarce, in this district.

Nevertheless *wages* are moderate. In regard to dispatch, they are much below par; and in what may be termed the honest pride of workmen, very deficient.

The YEARLY SERVANTS are, of course, proportioned to the number of labourers in the given neighbourhood.

Their *wages* are very low. Seven or eight pounds the ordinary wages of a man servant; ten pounds the highest. A woman three guineas. Not much more than half the wages given in Yorkshire. But a want of exertion, and an extravagance in keep, especially in *beer*, more than counterbalance the disparity in wages.

The ridiculous custom of the cider country, in regard to a superfluity of beverage, has

K 2

been

been seen in the Rural Economy of GLOUCESTERSHIRE. A custom, equally absurd, and much more *extravagant*, prevails in the MIDLAND DISTRICTS.

In the cider countries, in a cider year, the actual cost is inconsiderable. But here the enormity of extravagance is annual, and in a degree certain. The price of malt is much less fluctuating than that of apples and pears.

The *quantity* of liquor wasted may be somewhat less, here, than in Gloucestershire: but in *quality* and in *cost* of the beverage of farm labourers, this district far excels every other: see MIN. 22.

The TIME OF CHANGING servants, here, is Michaelmas.

The PLACES OF HIRING, “statutes.”

For a description of *Polesworth statute*, see MIN. 11.

For calculations and remarks on *beer*, see MIN. 22.

For instances of allowing labourers to plant *potatoes* in the nooks of arable fields, see 44.

For instance of labourers being allowed half the crop of *potatoes* for cultivating it, see 63.

For

For an instance of the *hard living* of farm labourers, see MIN. 94.

For the inconveniency of farm labourers living at a distance from the farm, see 101.

For a rare instance of strong natural ability, industry, and honesty, being united in a farm labourer, see 117.

## 12.

### BEASTS OF LABOUR.

HEAVY HORSES have been, time immemorial, the beasts of draught of this district.

Of late years, however, some few OXEN have been worked; and a spirit for working them appears to be gaining ground, apace, among superior managers.

The HORSE TEAM of this district is grown to a shameful height of extravagance. The *pride of show teams*, a folly observable more or less in most districts, is here truly absurd.

The first cost, the trappings, and the keep, are all equally out of character for *farm* horses.

A *fashionable* fixyearold horse cannot be purchased under thirty or forty guineas. Five horses are considered as a team. A show team, fit to be *seen*, cannot, therefore, be purchased for less than one hundred and fifty pounds.

The first cost, however, is not more extravagant than the annual expence. A show team is a shame to be seen, unless the horses have three or four inches of fat upon their ribs. To bring them to this exquisite state, they are of course limited in work, and unstinted in provender. "A strike a meal for six horses is counted *fairish* feeding." Two meals a day : fourteen strike a week ; near two and a half bushels a horse a week !

The harness, too, especially the housing, is truly ridiculous ; at once expensive and unornamental : standing up awkwardly high above the back of the horse ; like the sail-fin of the nautilus ; as if it were intended to catch the wind, and accelerate or retard the motion of the animal.

With

With respect to ATTENDANCE, however, the custom of the Midland District is economical, compared with the southern counties; where a man and a boy are allowed to each team of four horses. Here, a man alone, usually takes care of six horses (as a team and a saddle horse): "a waggoner" and his "lad," frequently of two teams.

As a species of PROVENDER, *beans* are still in use; though not so liberally as they were formerly, when the fields were open, and beans of course more plentiful than they are now. They are pretty generally "kibbled"—that is, crushed in a mill; whether for old or for young horses. *Barley* which is not malt-able, is sometimes given to horses; but it is not a favourite, or rather not a fashionable provender: it is apt to "*tan*" the horses! This, too, is frequently kibbled; and sometimes *oats* are crushed.

When *chaff* is not in plenty, all horse corn ought, no doubt, in strictness of management, to be *crushed*.

Another provender of horses, which is in use in this district, and in which, only, I have found it in ordinary practice, is "*cut meat*:" that is, oats in straw, cut into very short lengths,

in a chaff-box, and in a manner which will be spoken of under BARN MANAGEMENT. This is an excellent horse food, especially when hay is scarce; being in itself both *hay* and *corn*. The cutting, it is true, is some expence; but thrashing and pilfering are thereby avoided.

### 13.

## I M P L E M E N T S.

THE SPECIES OF IMPLEMENTS, requiring notice in this place, are,

The Waggon,

The Plow,

The Harrow.

The WAGGON is noticeable on account of its awkwardness, clumsiness, unwieldiness, and all together, in the present state of roads, its unfitness for a *farmer's* use. Its weight (with narrow wheels) a ton to twenty-five hundred weight. Its height, with the "geering" on, seven or eight feet (*when empty!*). The length  
of



of the body fourteen or fifteen feet: from tug to tail twenty, or upward!—The height of the fore wheels four feet nine or ten inches; without any infection in the body of the waggon to receive them! No wonder it should require near an acre of ground to turn it on; and a horse or two extra to draw it.

The gawkiness of its construction originated, no doubt, in the depth of the roads, at the time it received its present form:—a tall waggon was drawn on its belly *seldom* than a low one. But, now, when the roads are rendered more passable, a more convenient carriage ought to be adopted.

If any leading man would introduce the GLOUCESTERSHIRE WAGGON, he might be rendering his country an essential service. The superiority of a waggon which, when loaded with a full harvest load, is not much higher than the present waggon of this district, when empty, could not fail of being readily seen\*.

The

\* In this inland country, where *fail cloths* are not easily had, and where *tilts* are not yet in use for farmers waggons, *bair cloths* are common, for covering body loads, or spread occasionally along the middle of a top load. They come high, but are very durable.

The old PLOW of this district is similar to that of Gloucestershire : a long heavy unwieldy implement : requiring five or six horses to work it. At present, the prevailing plow is the modern plow of Yorkshire; from whence it has not been many years introduced into this district : even the steep ridges of some of the common fields are now plowed, in common, with this light short plow and three horses.

But a still more modern invention is the DOUBLE PLOW : an implement which took its rise in this neighbourhood ; and which has made the most rapid progress toward common use that any implement of husbandry, perhaps, ever did.

Every circumstance that lessens the expence of tillage, without lessening its efficacy, is of the first consideration in husbandry.

In Gloucestershire, we have seen the excessive cost of plowing with an ill formed plow, and with five, six, or seven horses to this one plow : a mode of tillage which heretofore has probably prevailed in most parts of the island.

In Norfolk, and in Yorkshire, we have seen this folly done away by a better constructed plow.

plow, and two horses, without a driver. And in the MIDLAND COUNTIES we find the same absurd practice now under eradication, by five, or perhaps only four horses drawing two plows, without a holder.

Double and even triple plows I have seen in use, many years ago, by a most ingenious husbandman, Mr. DUCKET of Surrey. These were formed with a *crooked beam*, and kept in an upright position, so as not to require a holder, by means of an upright spindle, passing through the end of the beam and the bolster, &c. of a pair of common plow wheels: such as are in use for the Norfolk and the turnwrest plows.

About twenty years ago, a farmer of this neighbourhood fetched a double plow out of WORCESTERSHIRE: but this, as Mr. Ducket's, did not "shift;" the bodies of the plows being fixed at some certain distance from each other, without any means of regulation.

The "DOUBLE SHIFTING PLOW" appears, evidently, to have been the invention (or rather perhaps an improvement of the Worcester-  
shire,

cestershire plow) of one BUSH, a wheelwright of Hurley, in the north of Warwickshire, about seventeen years ago.

Some fourteen or fifteen years ago he *advertised* it, and delivered printed directions for using it; but never had, I understand, a *patent* for it.

This BUSH is still (1786) the leading maker; but double plows, of his construction, are now made by all principal plowwrights; and may be said to be in the hands of every farmer in the district, who has strength enough to work one.

The great merit of the invention lies in introducing the ends of the two beams into the axle, or what amounts to the axle, of the wheels. Thus giving at once firmness, steadiness, and truth to the machine; and, at the same time, admitting of easy means of regulating, at pleasure, the width of the furrows.

Its rapid progress into common use among farmers of every class, who work horses enow to draw one, is best accounted for, perhaps, in the circumstance of its meeting the approbation of the "waggoners," who, to a man, are partial to it; because it requires their *whole team*, and a long whip to drive it;  
while

while they as uniformly disapprove of whip-rein plows; because they break their team; wresting part of their horses from them; and subject them, as they conceive, to the disgraceful task of both holding and driving their plow. And the farmers with good reason approve of it; because, in some cases, five horses and one man, with a double plow; will do as much or nearly as much work as six horses, two plows, two men, and two boys, usually do with single plows.

On straight even ridges, and level ground, the double plow makes very good work; but wherever the lands are crooked, or are wider at one end than the other, or the ground lies in hills and hollows, such work is frequently made, as a good plowman would, and as every farmer ought to be ashamed of.

However, in level work, *when the land is wet* (and liable to be poached by horses abreast), the double plow gains an advantage over the two-horse plow. Nevertheless, it is allowed by men in this district, who work both on a large scale, that though the double plow may, *in some cases*, be used with superior advantage, two horses abreast are, *on the whole*, the most eligible plow team.

The

The same principle of guiding by wheels, without a holder, has been of late years extended to the single plow. I have observed one man and a boy driving and directing two of these plows, with three horses at length in each. The man going first, and having guided his own plow at the end, and entered it securely, drove out the boy's team; and, having seen that fairly entered, stepped forward to his own. This method applied to two double plows (to which it is equally applicable) is reducing the *manual labour* of plowing to the lowest degree: one man and a boy to four plows: and, in a clean soil, in good working order, with a level surface and long straight parallel lands, good work may in this way be made.

The HARROW, which requires to be particularly noticed here, is one of very large dimensions (as six feet by five and a half, with five bulls and twenty-five tines) very heavy, and with the tines very long and strong,—*hung behind a pair of wheels*,—with shafts, similar to waggon fore wheels—and with a “*running bull*.”

This, in tearing up to the surface, and exposing there, the buried clods of a fallow,  
after

after those on the surface have been reduced, is an excellent implement.

I do not mean to speak of a large single harrow as being peculiar to this district; but I have not elsewhere seen it drawn with WHEELS; which bearing up the fore part, renders it much more effectual than when it has not this support.

Nor have I seen, in any other district, the “RUNNING BULL;” an admirable part, whether of a single or the double harrow. It consists, in the case under notice, of a string of iron, an inch or more in diameter, fixed on a cross bar in the front of the harrow, reaching almost, but not quite, from side to side; the immediate corner of a harrow being an improper point of draught. On this bar or string of iron, a ring, with a chain passing to the wheels, plays freely from end to end;—consequently whichever way the team turns, whether to the right or to the left, the harrow, by the point of draught being at liberty to shift from corner to corner, is not liable to be strained nor overturned; nor is the hind horse subjected to any unnecessary exertion at the ends.

A more

A more simple, and equally effectual, method is to tenon the cross piece, in front, into the two outside bulls, leaving the inner bulls short, so as to admit of a large iron ring to play upon the cross piece, made round and smooth for that purpose, with an iron pin a few inches from each end, to prevent the ring from running up quite to the corners; thereby giving, as has been said, a more eligible point of draught.

For instances of large farms having each a blacksmith's shop, see MIN. 48.

# I 4.

## W E A T H E R.

THE BAROMETER is here in good esteem. I have found it nowhere so well attended to as in Yorkshire, and this district: and, what is observable, in these districts a general spirit of enquiry and improvement is singularly prevalent. For want, however, of paying due attention to *other* circumstances



stances of the atmosphere than its *weight*, disappointment in the weather must of course frequently occur, in both districts \*.

During my two years residence in the MIDLAND DISTRICT, I paid an almost unremitted attention to this subject; especially during the HARVESTING MONTHS of *July*, *August*, and *September*: in which I kept a REGISTER OF THE WEATHER, on the plan of that formerly kept in Surrey †; noting with sufficient accuracy the STATE OF THE ATMOSPHERE, with respect to its *weight*, *moisture*, *beat*, *motion*, and *appearances*; with the *quantity of rain*, or, more generally, the STATE OF THE WEATHER, which resulted each day from the present and preceding state of the atmosphere; the only philosophical basis on which to found a foreknowledge of the weather.

Beside these registers in summer, I marked the PROGRESS OF SPRING, and caught the characteristics of SEASONS; such as, having seldom occurred, require to be registered.

I therefore collect the whole together in this place; thereby rendering them more useful than they would be in detached Mi-

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L

nutes.

\* See YORK. ECON. ART. WEATHER.

† See EXPERIMENTS AND OBSERVATIONS ON AGRICULTURE and the WEATHER.

notes. Beside, the reader may, in this form, read them, or pass them over, as inclination may direct. I publish them the rather, as they contain a kind of information which, though not difficult to collect, requires a degree of attention and perseverance, to which few men, who are not immediately interested in the quality of seasons, would subject themselves; and still fewer, perhaps, of those who are, have leisure and *patience* enough to go through so tedious an employment; or, if they should, have not perhaps an opportunity of rendering their collections useful to the public.

STATFOLD, APRIL 28, 1784. The weather of last summer was extremely hot; as hot, perhaps, as has been known in this island; more *disagreeably* hot than I remember to have felt it in the West-Indies.

The 28th July the thermometer got up to 87° of Fahrenheit: the 2d August, at twelve o'clock, in a north shade, it rose to 89½°: at half past twelve the same day, to 90 degrees\*!

Autumn

\* The first position I took myself: the two last were taken by a man on whose accuracy I can safely rely. I saw the thermometer, presently after, in the situation in which they were taken: a fair north shade: no reflection to add to the natural warmth of the atmosphere.

I register

Autumn was moderate; but winter and early spring extremely severe.

On Christmas-day a frost set in, which lasted without intermission (a day or two excepted) until the 20th February. An EIGHT WEEKS FROST; with one of the deepest falls of snow that can be remembered. In some parts of Yorkshire the distress for fuel was such as has seldom, perhaps, been experienced, in any country.

Last month, as well as the present, have been uncommonly cold and peevish: this far, the backwardest spring I have known. The hazel did not begin to blow until the second week in March; and continued to blow until the middle of April!

It seldom happens that there are not a few genial days, in February or March, to bring out some of the earlier plants; but this year, even the coltsfoot and dwarf deadnettle did not *begin* to blow before 6th April! nor did the grosberry foliate until the 18th April! and the hawthorn hedges are still as naked as they were at Christmas.

L 2

Extra.

I register this incident the rather, as it evidences a degree of heat which, I believe, the atmosphere of this island rarely acquires.

Extraordinary ! the swallow, this year, returned, and the grosberry foliated the same day ! and notwithstanding the backwardness of spring, the cuckoo began to call the 26th April, in a cold sharp white-frosty morning.

How various are the circumstances attending the progress of spring, in different years ! in 1779, the grosberry foliated the 20th February, and the swallow did not appear until the 8th May \*.

PROGRESS OF SPRING 1784 †.

Hazel blowed March-April !

Grosberry foliated 18th April !

Swallow returned 18th April !

Cuckoo began to call 26th April.

Sallow blowed 27th April !

Poplar in pride 7th May.

Hawthorn foliated 9th May.

Blackthorn blowed 11th May.

Fine-leaved elm foliated 13th May.

Oak foliated 18th May.

Ash foliated 24th May.

Hawthorn blowed 31st May.

Wheat shot into ear 20th June.

JULY

\* See NORF. ECON. ii. 337.

† In *this* neighbourhood: an early situation. See page 5.

**JULY 9.** The first week in May summer set in ; so that, this year, there was no palpable progression of spring : it might be said to be winter one day and summer the next. Vegetation broke forth at once with unusual vigour. During the principal part of May, and the first three weeks of June, it was rapid, perhaps, beyond example. But toward the wane of the month, either through too much moisture and coolness, or from the powers of vernal vegetation having exhausted themselves, there was an evident check in vegetation, especially of grass. About the first of July the rains took up, and dry weather gave, at length, a loose to haymaking.

**AUGUST 1.** The first eighteen days of July were fine ; excepting a thunder squall in the night of the eighth : the latter part of the month a continuance of wet weather.

The inferences resulting from the last month's REGISTER OF THE WEATHER are these \* :

L 3

The

\* I forbear to publish the register at large, lest it should be considered as an incumbrance to the generality of readers, to whom it would not be useful : the inferences, drawn at the time, will be of more general utility.

The *barometer*, during the former part of the month, was truly prognostic; portending the thunder storm with sufficient accuracy. But, during the rains at the close of the month, the barometer viewed separately, was deceptious; continuing at or above par, during the rainy weather. On the 30th, when a very heavy rain fell, it rose two degrees \*.

But the *hygrometer* was, at that time, in the extreme of moistness. Therefore, the inference to be drawn, in this case, is, that 1° heavy is not able to support a very moist atmosphere: for, by the appearances, it was as moist upwards, as it was near the earth. But rising yesterday to 3° and today to 4°, the rain has ceased; notwithstanding the hygrometer and appearances remain moist.

The *thermometer* continued above par all the month: even during the rain it was 1° warm; and, on the hottest days, not more than 4°.

The

\* The several instruments are graduated in this manner: the extreme points being ascertained, the mean between them is taken as par; from which ten equal degrees are marked toward each extremity. See EXPERIMENTS and OBSERVATIONS ON AGRICULTURE and the WEATHER, page 115, and the PLATE of INSTRUMENTS there given.

The *wind*, during the former part of the month, kept to the northward of west; excepting two days preceding the thunder storm, when it got back to the southwest and the south: but what is remarkable, the rain came with a strong northeast wind: and what is not less observable, the heaviest of the rain, at the close of the month, came with the wind at south and a southeast.

*Appearances*, whether in high day, or at the close, were singularly consistent. Streamers ("mare's-tails," Surrey—"filley-tails," Yorkshire—"hen-scratlings," Midland) and with small livid clouds failing beneath them, were uniformly prognostic of foul or showery weather. The setting sun might be said to be truly prognostic throughout. Brightness or with a degree of redness preceded fine, foulness or broken watery clouds portended foul weather\*.

L 4

AUGUST

\* It must be observed, however, that I was frequently deprived of the advantage of seeing the immediate setting (the great thing to be depended upon) through the want of a sufficiently clear horizon. A serious inconveniency in the situation of a farmery.

AUGUST 12. An hygrometer in the house is not, invariably, a guide to the moisture of the air in the field.

Yesterday, two hygrometers, in the house, though exposed to a thorough air, stood at 7 to 8° moist; while hay spread upon the ground, as wet as rain could make it, dried sufficiently to be carried (*à la* Midland) about three o'clock in the afternoon.

To prove the comparative state of absorpency of the air within, and that without, placed one of the instruments in the open air: it fell 5 or 6° in about an hour; while that in the house remained unmoved.

In this case, the probable reason of so great a disparity, was the local dampness of the situation in the house; caused by the unusual dampness of three or four days preceding; and which had not yet had time to escape.

AUGUST 14. The string of a hygrometer should be gently stretched, before the true state of the moisture of the atmosphere can be ascertained by it: more especially after the air has been remarkably moist, and is growing drier.

Notwithstanding the air, to day, is as dry as sun and wind can make it, and, to common appearances,



appearances, as dry in the house as in the field, the hygrometer in the former stood at 3° moist.

Being impatient to see the index fall, I pressed it down gently with the finger, some two or three degrees; and, to my surprise, it stood there. I then forced it down still lower; where it resisted the pressure, and, on being set free, rose deliberately to somewhat above par; where it still remains.

This incident led me to another instrument, placed in the sun and wind; and which stood at 4° dry: but after forcing down the index to the stretch, below the extreme point, it rested, and now stands, at almost extreme dryness.

Excessive moisture, on being dried up, leaves behind it a gummyness (especially perhaps in a linen substance) which the weight of the index is not able to overcome. It is, therefore, as necessary to press down the index of a cord hygrometer, as it is to tap the case of the barometer.

AUGUST 15. The air is at length become thoroughly dry, as well in the house as in the field,

One hygrometer placed in the *wind* and *sun* (very warm ;  $89^{\circ}$  in the *sun* ;  $77^{\circ}$  in the *shade*) dropt to  $8^{\circ}$  dry. Removed it into the *shade*, but full, as before, in the *wind*,—it remained stationary for some time : but afterwards sunk  $\frac{1}{2}^{\circ}$  still lower. Replaced it in the *sun* : no perceptible variation took place.

A proof that the *sun*, when the *wind* is absorbent, is of little or no use in the *drying* of vegetable substances \*.

Another, which remained in the house, fell equally low ! and, on returning the portable one to its place in the house, it did not rise even a hair's breadth !

Proofs that when the *air* is highly absorbent, it has the property of drying quickly and thoroughly, without either *wind* or *sun*.

SEPTEMBER 1. THE REGISTER OF THE WEATHER OF AUGUST affords few inferences.

The month consisted of a mixture of fair and showery weather ; with one heavily rainy morning. Seventeen fair days ; fourteen more or less rainy.

The

\* Nevertheless in what is termed the *weathering* of *hay*, &c. the *sun* may be most effective.

The *barameter* varied from par to 4° heavy; and, on the whole, acted with great truth; the 6th it got down to  $\frac{1}{2}$ ° heavy; the attendant circumstance was half an inch, at least, of rain: the 28th it stood at par; and the estimated quantity of rain not less than a quarter of an inch. The 31st it likewise got down from 1 $\frac{1}{2}$ ° to  $\frac{1}{2}$ ° heavy; another quarter of an inch of rain fell.

The *hygrometer* did not act, last month, with equal sensibility. The former part of the month it was, in general, extremely moist: though we had several *fair* days: to its credit, however, we had few *bright* days: a sort of smokey, gloomy, overcast weather. The latter part of the month, from par to 5° dry; with nevertheless, a similar kind of atmosphere.

The *thermometer*, chiefly, from par to 2° warm.—The 15th it rose to extreme heat; with no remarkable attendant or consequent circumstance.

The *wind* varying, Upon the whole, and in almost every instance, north of west brought fair, south of west rainy weather: 5° due west brought light flying showers.

*Appearances* have been deceitful; even streamers with underfaiers passed off without

out rain; were in one instance succeeded by a singularly scorching hot harvest day. The setting sun, however, saved its credit; portending, with its wonted faithfulness, the quality of the coming weather: in the instances, I mean, in which I had a full opportunity of observing its appearances.

*Upon the whole*, notwithstanding the changeableness of the weather, the indecisiveness of the instruments, and the inconsistency of common appearances, I have not, resting my judgement on the mass of information, committed one essential error, in the course of last month.

OCTOBER 4. From the first to the nineteenth of last month, hot parching harvest weather. To this succeeded ten days of showery weather; but not settled rain: and to this a week of very fine settled weather for the season; and this notwithstanding some severe *white frosts*: a rare incident.

During the eighteen days settled fine weather, the *barometer* and *hygrometer* were unanimous: the former varying from  $1\frac{1}{2}^{\circ}$  to  $3\frac{1}{2}^{\circ}$  heavy; the other, from  $2^{\circ}$  to  $6^{\circ}$  dry. During the ten days showery weather, the barometer kept below par; but the hygrometer remained

remained stationary. Hence, perhaps, we may say, the weather was only showery, not rainy : and that the barometer recovering its elevation, and the air of course its weight, the weather, in consequence, became fair and firmly settled.

With respect to *appearances*, it is observable, that during the fine weather in the former part of the month, the sun frequently set with a degree of foulness ; occasioned, however, principally by that species of *SMOKY-NESS* which is frequently seen in droughty seasons ; and which was so memorably conspicuous, throughout Europe, I believe, in the dry summer of 1783.

After the whole of this summer's experience, I can say, what I may not be able to repeat the next, that I have not, generally speaking, been once *deceived* in the weather ; that is, I have not once been *caught* in the rain, either in hay or in corn harvest.

OCTOBER 13. A remarkable incident ! Today ; there has been two or three smartish *SHOWERS* ; with the *barometer* at 4° heavy, the *hygrometer* at 4° dry, the *thermometer* at temperate, and the *wind* at due north ! In this instance,

instance, *appearances* alone portended them. Notwithstanding the barometer and hygrometer have been stationary for near a fortnight, with a remarkably bright fine atmosphere, this became, the day before yesterday, loaded with large heavy clouds, with small livid specks sailing beneath them; and yet without any alterations in the weight, moisture, heat, or motion of the air, at the surface of the earth. This, though no general inference, perhaps, can be drawn from it, appears to me an interesting fact. The quantity of rain has not been great, but what fell came down freely, and from a loaded atmosphere.

NOVEMBER 18. From that day, the season continued remarkably dry for more than three weeks. Wheats, which were sown the beginning of October, lay in the ground a full month, before they came up so as to meet the eye. The ground remained as dry as in any part of summer: even the fallows of the common fields have been, until about a week or ten days ago, too dry and cloddy to work; and whole ground much too hard to be plowed with propriety.

The

The night before last there was thunder and lightning! with a deluge of rain in the morning. Yesterday fine, and part of the night frosty; but, this morning, the rain returned, and has continued all day, raining very hard; with every appearance of a rainy season being set in. Nevertheless, the *barometer* stands between 1° and 2° heavy, and the *hygrometer* between 2° and 3° dry!

This rain, perhaps, may be accounted for in the lightning and the *wind*: which for the last week has been westerly and strong; bringing with it a succession of heavy clouds from the sea. But the wind is now north-east; bringing back the vapours, perhaps, in a compressed state, arising from this *contrariety of winds*.

JANUARY 19, 1785. The second of December a frost set in, hard enough to stop the plow; which has stood near seven weeks frozen in the soil: yesterday being the first day (notwithstanding we have had a singularly mild muggy air for the last ten days!) on which it could be set to work with propriety.

This has hitherto been an old-fashioned winter: frost and snow setting in, as of yore,  
before

before Christmas. But so much severe weather before that time has seldom, perhaps, happened in any age. A man who can recollect sixty years, does not remember a similar instance.

It is remarkable, that the *barometer* rose during the thaw. The 5th and 6th, when it froze severely, the glass was below par; the 9th, the air peculiarly mild and muggy, it stood firmly between 3° and 4° heavy; and the 10th, *rose*, during the same moist state of the air, to 4½° heavy! It is observable, however, that no rain fell.

FEBRUARY 10. Yesterday, during a hard frost, the *barometer* stood at 1° heavy. To-day, it has got up to 4° heavy, for a drizzling mild rain!

FEBRUARY 20. About a week ago the barometer stood at 2 to 3° heavy: the air frosty. But the air becoming mild, with a drizzling rain, it rose (while it actually rained) to the unusual height of 7° heavy!

It has since kept lowering gradually: the weather mild; with every appearance of a fall of rain. But instead of this a smart shower of snow took place; clearing up with a frosty air;



air; freezing most intensely all night, with the barometer at par; at which it still remains: though last night, at six o'clock, the thermometer got down to  $20^{\circ}$  (of Fahrenheit), and at nine to below  $16^{\circ}$ , the lowest I remember to have seen it\*.

APRIL 24. The season still dry: not one-tenth of an inch of rain has fallen since the frost. Nevertheless, the earth, even to the very surface, is moister than it was some weeks ago! and this with the air at the extreme of dryness! Oats come up as quick and as strong as if the ground were full of rain! and the springs are all alive.

MAY 8. The barlies and the late-sown oats produce a motley sight; appearing in blotches: half up, half in the ground, as dry as when they were sown.

MAY 17. Last night fell the first shower of rain we have had this spring. And even this is too inconsiderable to bring up the late-sown crops.

JUNE 1. At length we have had some cool dropping weather; but yet no quantity  
of

\* Yet during this paroxysm of frost the barometer sunk to  $2^{\circ}$  light! In winter, the weight of the air should seem to have no influence on the weather.

of rain. That which has fallen, however, has been sufficient to rouse a principal part, at least, of the latent barley.

JUNE 30. The last winter and spring have been strongly marked ; and the summer continues no less extraordinary. The frost, taken altogether, unusually long and severe ; with but little snow ; and this little drank up by the sun, or dissipated by the dryness of the atmosphere ; a very small portion of it penetrated the soil. Yet not one drop of rain (some drizzling showers excepted) from November until the latter end of May, when the ground was moistened nearly plow deep. But, from that time to the present, the weather has been uniformly dry, and often excessively hot !

The early part of this spring advanced more slowly even than that of the last. For although it made an effort about the 20th of March, frost and snow returned the 22d, and continued till the beginning of April. The *coltsfoot* did not shew itself before the 5th of April ; nor the *pilewort* disclose its blossoms till the 6th. And those of the *hazel* were never conspicuous : it might be said to blow about the first of April. The *grossberry* did

did not foliate till the 16th; before which I saw two *swallows* nesting!

PROGRESS OF SPRING 1785.

Hazel blowed about the 1st April.

Fieldfares singing their parting song 6th April\*.

Water martins nesting 13th April.

Swallows nesting 14th April.

Grosberry foliated 16th April!

Sallow blowed (a pale sickly colour) 16th April.

Hawthorn foliated 26th April.

Poplar in pride 26th April.

Female wasps 26th April.

Cuckoo—uncertain—

Blackthorn blowed 5th May.

Oak foliated 12th May!

Ash foliated 24th May!

Hawthorn blowed 1st June!

Wheat shot into ear 24th June.

The foliation of trees was, this spring, singularly rapid. The elm, the maple, the fallow, &c. &c. *and the oak!* were all in a state of foliation at the same time! the 7th May.

But the most observable circumstance in the progress of vegetation, this spring,—was

M 2 the

\* But though in full chorus on that day, they did not take flight till some time afterwards.

the early *foliation* of the *oak*, compared with that of the *ash*, and the *blowing* of the *hawthorn*: the *ash* near a fortnight, and the *hawthorn* near three weeks, after the *oak* !

It is likewise remarkable that the *meadow trefoil* (the wild red clover) blowed, this spring, with the *meadow foxtail* and *vernal*! beginning to blow the 12th of May: actuated, probably, by the same law of nature as the *oak*: both of them tap-rooted, deep-striking plants: while the *ash*, the *hawthorn*, the *foxtail*, and the *vernal* are merely fibrous, and feed, comparatively, near the surface. Hence, admitting the principle of vegetation to be merely that of comparative rarefaction, these extraordinary circumstances may be accounted for in the different states of the earth and the atmosphere, at the time these circumstances took place.

AUGUST 1. REGISTER OF THE WEATHER in JULY. Much thunder, with heavy showers; but no long continuance of rain.

The *barometer* wavering from  $2\frac{1}{2}^{\circ}$  heavy to  $2^{\circ}$  light; hovering much about par: of course no dependance could be placed in it, separately considered.

The *hygrometer* uniformly dry; varying from  $4^{\circ}$  to  $8^{\circ}$ . Hence, perhaps, no continued

tinued rain. None fell but what was provoked, or stimulated, by thunder and lightning; which, frequently, were not able to shake down a shower: owing, probably, to the dryness of the atmosphere. I never experienced the use of the hygrometer so much as I have done last month.

*Thermometer*, uniformly warm: the air sometimes very hot: so high as  $78^{\circ}$  of Fahrenheit.

The *wind* various: the rain came chiefly with the wind at southwest, or west. Thunder passed off without rain, with the wind at north.

*Appearances*. Large dark indigo-coloured clouds portended approaching thunder. Livid clouds, forming whirlpools on a silvery ground, immediately preceded remarkably vivid beautiful lightning; running, serpentine, along the face of the clouds. The scenery and the music equally sublime!

AUGUST 7. On Wednesday last, the 3d of August, ended the DROUGHT OF EIGHTY-FIVE.

Prior to that, partial thunder showers had quenched particular spots; but no general rain took place, in this part of the

M 3 island,

island, till that day,—when an inch of rain, at least, fell. This, with some showers, before and since, have moistened the soil to the bottom ; and fully satisfied the farmers ; who are now calling out for fair weather, to get in their harvest.

A “ DRY SUMMER ” is a phenomenon to the middleaged men of this country. Old George Barwell \* (seventytwo) says no man who cannot recollect forty years can know anything of “ dry summers : ” about forty or fifty years ago, he says, there were three or four dry summers, nearly succeeding each other ; and speaks of one about twenty years ago : adding, that he never knew a dry summer which was not preceded by a severe winter, and succeeded by great crops. He foretold with great confidence, early in the spring, the dryness of this summer : saying that he did not remember an instance, before last year, of a long frost without a dry summer to succeed it †.

The

\* See MIN. 117.

† This year, 1789, is another exception. Last winter was remarkably dry (see GLO. ECON.) with a very long frost ; and this summer as remarkably wet. Not more

The summer after the "nine weeks frost," he says, was dryer than this has been; and the crops of that summer, particularly the wheat, did much worse, than they have done this; owing chiefly to its being more injured by the frost. The price, the ensuing winter, got up to nine shillings a "strike" (a bushel). But the next year's crop was so profuse, it got down to half a crown! and continued low for several years afterwards; the crops being remarkably good: owing in part, he thinks, to the frost; but still more to the drought. He seems to consider the rays of the sun as a species of manure!

Be this as it may, his natural understanding is remarkably strong, and his observa-

M 4

tions

more than three weeks or a month's harvest weather, for both hay and corn. The early cut grass and the late cut corns were in a manner wasted. Summer floods were perhaps never more mischievous. In going down into Leicestershire, in July, I saw not only hay cocks, but waggon, floating in the meadows. And in returning, in October, by the way of Oxfordshire and Berkshire, the bean crop almost entirely, and much barley were still out. And by authentic information from Yorkshire, the same crops were then in a similar state, in November! when, on the lower lands, little wheat had been sown; nor any prospect of sowing it.

tions on rural matters generally clear, and frequently just.

To the DRY SUMMER OF EIGHTYFIVE I have paid some attention ; and it may be right to preserve such particulars respecting it as are now fresh in my mind.

It was *preceded* by a continuance of frost without snow ; a remarkably dry winter ; and by the other circumstances of the weather above recited.

The *attendant circumstances*, beside those of the weather which appear above, were,

An overabundance of *insects* : the oak and the apple tree have been in a manner disfoliated by a caterpillar (see MIN. 150.) The turnep, too, beside the beetle and the tentredo, has been pestered, this year, by a new enemy—the bug (see MIN. 61 and 84). But, what is observable, the chafer (the common brown beetle) scarcely made its appearance, in this district \*.

*Vegetation*, in the early part of the spring, though the ground was sufficiently moist, was in general weak ; owing principally, perhaps,  
to

\* See MIN. 147.



to night frosts; and, in the later part of spring and in summer, it has been unable to exert itself; the subterraneous moisture being exhausted, without being replaced by a supply from the atmosphere.

*Pasture grounds* were, of course, bare, and *meadows* short. Nevertheless, it is observable, that

*Cattle*, were their pasture ever so naked, looked sleek and healthy. But, unless where ground was understocked, cows gave little milk, and “feeders” gathered little fat.

Even *horses* were distressed for want of water. See MIN. 58.

*Sheep* alone did well. In a moist country, dry weather is favourable to sheep. It *raises* them to their natural situation.

*Wheat*, injured by the frost, got thin upon the ground, in the spring: in some places, so “gally”—so full of bare patches—as to be scarcely worth preserving as a crop.

*Spring corn*, in general, came up partially. Some, however, sown early and immediately after the plow, came up well together, and preserved a pretty good strength of vegetation.

*Plantations*, and fresh-planted hedges, fared extremely ill, The frosts continued late; and

and were immediately preceded by dry parching winds. See MIN. 148.

*Fires* were never so frequent : no less than two villages have suffered almost total destruction in the Midland Counties alone !

No *thunder* until last month, when it became very frequent : otherwise, in much probability, we should still have had a continuance of drought. For, generally speaking, we have had no rain which has not been shook down by thunder and lightning.

The *barometer* has been no certain guide to the weather. Thunder, alone, seemed to preside in the atmosphere.

*Drinking pits* were, of course, dry : many *springs* the same : and *rivers*, in consequence, unusually low. Millers, perhaps, never experienced a greater want of water than they did for some time before the late rains brought a supply to their pools. Even the

*Price of wheat* was affected by the circumstance : their mills being full, and their purses empty, the markets became crowded with samples, and a fall in price the natural consequence.

A re-

A remarkable *fall in the price of livestock*. In the spring, stock was unusually dear : not nearly enough in the country to supply the cravings of the graziers : owing, perhaps, not more to a real scarcity, than to a succession of good grazing years. The rage for stock did not abate until the middle of May, when lean cattle began to drop, and continued falling in price until Tamworth fair, 26th July ; where store cattle could not be sold at any price. Even pigs, which four months ago were worth fifteen shillings a piece, might, a fortnight ago, have been bought for ten. Horses, too, fell from the clouds. Sheep alone kept up.

The *consequences*, so far as they are yet unfolded, are,

*Fallows* appear to have received an extraordinary degree of melioration. The turnep fallow of No. 2. is in a state of tilth (friability, mellowness) in which I have not, I think, seen plowed ground before ; owing, perhaps, not more to the dryness of the summer, than to the frost in winter, when it lay in ribs, or narrow single-furrow trenches. The rootweeds appear to be totally annihilated ; and the  
seeds

seeds of weeds, unlocked by the pulverization of the soil, and now sufficiently moistened by the late rains, are spending themselves: the surface green with seminal weeds.

Fallows that have this summer received tolerably good management, will, it is highly probable, communicate a degree of fertility to the soil for some years to come; and it is equally probable, that soils not in a state of fallow will receive a similar degree of improvement, from their texture being broken by the frost, and their crudities drawn out or corrected, to an unusual depth, by the sun. I speak more particularly of strong and middle soils. There is indeed an idea, which is probably of ancient date, as it has grown into a maxim, that "a dry summer was never bad for England\*."

No *turneps*, except a few patches which were sown early, when the spring moisture was not yet exhausted, and when their enemies—from what cause is a mystery—perhaps

\* The summer of 1786 I spent in London, and cannot speak, from my own observation, of its crops. The summer of 1787 shewed such a strength of vegetation as I never have, in any other summer, observed. See *YORK. ECON.* v. i. p. 289.

haps for want of a shower to assist their exclusion—suffered the plants to rise without a check. But the middle and the later sowings have been cut off wholly by the *beetle* and the *bug*; which would not suffer the *caterpillars*, though numbers of flies were among them, to partake of the spoil; the plants being commonly devoured before the eggs of the *tenthredo* had time to be matured. I found one nearly ready for exclusion, and another half naked in its *nidus*; part of which had been devoured by the rapacious beetle.

*A scarcity of hay.* Not one fourth of a common crop; including both meadows and upper lands. See MIN. 56.

*An unevenness in corn crops:* occasioned by the wheat being injured by the frosts; and the spring corn rising partially; through a want of sufficient moisture, at the time of sowing; appearing, throughout summer, in two or perhaps three crops.

*A plumpness of grain:* especially of wheat, and of oats that were sown early\*.

*A scarcity*

\* Mr. BAGE, of Elford, on whose accuracy I can rely, mentions a remarkable circumstance respecting his wheat; which, this harvest, is so full in the ear, that  
while

*A scarcity of cheese.* Not more, perhaps, than two thirds of the common make of factors cheese will go to market.

*A scarcity of fat cattle.* It is probable that half of the "feeders" in the district are not of more value now than they were when turned to grass; and still more probable, that not one in ten is what is termed good beef. See MIN. 53.

Upon the whole, this dry summer is likely to produce, in the first instance, *a very bad year for farmers*; and all the consolation they have at present, is the hope of a succession of better crops in future \*.

AUGUST 21. The last fortnight has been almost continually rainy! no possibility of carrying corn, in tolerable order, until to-day. And this day happens to be Sunday †!

Took

while the straw was yet underripe, the grain, assisted by the late showers and gleams, burst its bounds, shewing itself to the eye as it stood upon the stalk; and shedding, in the act of reaping, a quantity nearly equal to the seed sown!

\* Great quantities of *mushrooms*, and of *wasps*, were other consequences of the dry summer of Eighty-five.

† Nevertheless, some farmers in the neighbourhood, I find, had good sense and gratitude enough to secure a considerable part of their wheat crops.

Took a ride in the morning to see the state of the corn crops. The wheat, mostly cut, and almost all standing in "shuck," except a few loads carried last night. *Barley*:—a good deal down, and very much discoloured, and some beginning to "sprit." *Crops*, in general, thin; in the common fields very thin;—barley, on a par, not half a crop. *Oats*:—some carried: many down: straw much injured: crop very bad:—especially in the common fields, scarcely worth mowing: the oat crop throughout not half a common crop. *Beans*:—mostly down. Crop, execrable! not beans, but the straw of catlock; whose feeds would lie thick enough to hide the surface, had not part of it been swallowed, before the rain, by the fissures or cracks; running down, perhaps, some feet deep! Yet succeeding generations may wonder how it came there.

AUGUST 30. Yesterday, in much probability, the *barometer* and *hygrometer* were instrumental in saving three times their cost. I had some wheat to carry, and some barley to mow. The wheat was in fine order, except the immediate butts of the sheaves; which, being set up when the ground was moist, the  
bottoms

bottoms remained damp and dirty; the straggling ears which happened to touch the ground being some of them damaged. It was therefore proper that the shucks should be laid open, and the butts aired, before they were carried; and my original intentions were to have mown barley in the morning, and to have carried wheat in the afternoon; allowing the butts and the inner sides of the sheaves all the forenoon sun and air to dry them.

The three preceding days had been tolerable harvest weather, and the early part of the morning was bright and fine: general appearances, then, bespoke a fine day. But the *barometer*, though high ( $31^{\circ}$  heavy), was sinking: the *hygrometer* getting moist. The preceding morning had been marked by a *white frost* (the first this autumn), and the *canopy* the two preceding days had been frequently scattered with streamers. The *sun*, too, began, as the day advanced, to lose its splendor, and to play at hide-and-seek among the clouds.

I therefore, at length, concluded to secure the wheat; sending a boy before to open the shucks, by laying the sheaves down gently  
upon



upon their backs : by which means most of the butts had two or three hours wind and partial sun to dry them ; and the ears having been uncapped the day before, the whole was carried in good order.

The last load was barely in the barn when it began to rain ; it has continued showery ever since ; and now rains very hard !

But, thanks to the *barometer*, on which chiefly I rested my judgement, and which is now below par ! the wheat is in the barn, and the barley still standing.

AUGUST 31. A valley, with a river in it, *appears* to have an influence on *showers*. It is a common observation in this country, that the TRENT draws away showers from this neighbourhood : and I have repeatedly observed that the TAME *seems* to have a similar effect.

SEPTEMBER 1. REGISTER OF THE WEATHER OF AUGUST. The last has been a rainy month ; with only one interval of fair weather. No thunder, except once, at the beginning of the month. Hence, perhaps, the weather has been influenced chiefly by the *weight* and *moisture* of the atmosphere ; and

The *barometer* and *hygrometer* have, of course, been truly prognostic : except in one instance, when a quantity of rain fell, without any other previous change in the atmosphere than a sensible *chilliness*; which was sufficiently noticed by the *thermometer*; but which made a still greater impression on the senses.

This chilliness and the rain were brought by a brisk north *wind*, after a succession of south-west winds. The *clouds* of vapours were probably returning in a condensed state, and finding our atmosphere in a state comparatively rarefied, only  $1\frac{1}{2}^{\circ}$  heavy, they of course fell : and this, notwithstanding the air near the earth was  $5^{\circ}$  dry.

Hence, when the *barometer* is about par, no dependance can be had on the weather; not only *lightning*, but the *wind*, is able to influence it; and, of course, every minute circumstance of the atmosphere should be attended to, with double diligence.

OCTOBER 1. THE REGISTER OF THE WEATHER OF SEPTEMBER. Another rainy month! with, however, several short intervals of fair weather. With frequent *fogs*; and some  
*thunder*

*thunder and lightning*, which always brought rain.

The *barometer*, about, or below, par; until the wane of the month, when it rose from  $31^{\circ}$  light to  $31^{\circ}$  heavy in forty-eight hours! a most extraordinary rise. The consequence of which was, after a deluge of rain, three or four fair days.

The *hygrometer*, above par, the whole month; notwithstanding the wetness of the weather! a most interesting circumstance.

The *wind*, wavering: principally south or southwest; frequently strong. Shifting round to the northeast, brought a fall of rain.

*Appearances.* Small livid underfailing clouds were pretty certain forerunners of heavy showers. The setting sun (when observed) generally foul.

GENERAL OBSERVATIONS. On the whole of this summer's experience, I have been less certain than on that of the last: owing principally to the barometer resting about par; the atmosphere remaining in equilibrium; susceptible of the slightest alteration of moisture, wind, lightning, or other impulse.

N 2                      Considering,

Considering, however, this circumstance, as well as that of my seldom having an opportunity of seeing the western horizon, during the setting of the sun; and with these, the extreme wetness of the corn harvest; it is not, perhaps, less remarkable that I should have been *caught, only once*, this summer, than that last summer I should escape without an accident.

At present, I am clearly of opinion, that, by attending to the BAROMETER and the SETTING SUN, only, the weather may be foretold, frequently for three or four days, generally for twenty-four hours (a length of time essentially serviceable to a farmer) with a degree of certainty: provided the atmosphere be not, in the mean time, agitated by thunder and lightning; against which there appears to be, at present, no certain guard. They will sometimes foreshow themselves for several hours, in the figure and colour of the clouds: but in general, *perhaps*, they are not there to be foreseen: and the grand desideratum now wanted is a prognostic of lightning, as well as a test of the presence of the electrical fluid, or the matter of lightning; as it is more than probable that this has its influence

fluence on the atmosphere; though it do not show itself in lightning, or still more forcibly declare itself in thunder.

But supposing that even thunder, the most certain harbinger of rain, cannot be fore-known with any degree of certainty; this, considering its comparative unfrequency, ought to be no discouragement to the farmer.

The sailor, though he cannot calculate the longitude, *with certainty*, is nevertheless assiduous in making and registering his observations,

To pursue the comparison, a farmer without a barometer, in HAYTIME and HARVEST\*, is a sailor at sea without a quadrant. And,

N 3 in

\* From general observation, as well as from the incidents registered foregoing, the weather appears to be influenced, in some degree at least, by different causes, in different seasons: and although it may not be wrong to *observe* these influences, in AUTUMN, WINTER, and SPRING; yet I am clearly of opinion, that the facts arising from such observations, ought not, in drawing inferences, to be *mixed* with those collected in the SUMMER MONTHS. For other remarks on this subject, see EXP. and OBS. on AGR. and the WEATHER, p. 155.

in the strictness of good management, it is not less requisite to the latter, in that situation, to be attentive to his log-book, than for the former, in those seasons, to pay due attention to his register.

To the student, at least, a REGISTER is indispensibly requisite : it is not merely a stimulus to his attention, but, by preserving what no memory can retain, becomes an authentic document of study : a record of reference to a combination of facts : the purest fountain from which to draw practical knowledge.

## GENERAL

## 15.

# GENERAL MANAGEMENT OF FARMERS.

THE OBJECTS of the Midland husbandry vary, in different quarters of the GENERAL DISTRICT, as has been already intimated, and as will more fully appear in the course of this volume.

In the DISTRICT of the STATION, the four grand objects are mixed in a singular manner:

GRAIN of almost every species;  
BREEDING in all its branches;  
DAIRYING on a large scale; and  
GRAZING, both cattle and sheep\*.

N 4

The

\* And to these might be added a fifth,—JOBBERING; which is not here, as in other districts, confined to what might be called professional *dealers*, but enters, more or less, into the business of *farmers*; as will appear in MIN. 107.

The OUTLINES of management consist in keeping the land in *grafs* and *corn*, alternately, under a singular system of practice; and in applying the grafs to the *breeding* of heifers for the dairy, to *dairying*, and to the *grazing* of barren and aged cows; with a mixture of ewes and lambs for the butcher; all together, a beautifully simple system of management; and, being prosecuted on large farms, and by wealthy and spirited farmers, becomes a singularly interesting subject of study.

In giving a detail of the ARABLE MANAGEMENT, I shall attend solely to the INCLOSED TOWNSHIPS; which, whether the inclosures be new or of an older date, are cultivated under the same course of management\*.

#### REFERENCES

\* The husbandry of COMMON FIELDS is the same in most parts of the island; as if a general order or arret had, at some early period, gone forth for their regulation. In Yorkshire, in Gloucestershire, and in the Midland Counties, one uniform practice prevails: uniform, I mean, in the *outline*: in the *minutiae* differences are traceable; and as, in a few years, the common field husbandry of this island will probably be no more, I endeavoured to catch these minutial differences in the MIDLAND COUNTIES. See MIN. 98.



15. MANAGEMENT OF FARMS. 185

REFERENCES to the MINUTES relating to  
the GENERAL MANAGEMENT OF FARMS.

For conversation and reflections on the  
*arable management* of this district, see MIN.

19.

For a caution to the occupiers of *extra-  
parochial farms*, 33.

For general reflections on the *business* of  
farming, 67.

For an instance of impolitic management  
in an *outgoing tenant*, 76.

For obs. on *neatness* and *minutial* manage-  
ment, 78.

For an instance of the use of *experiments*  
to farmers, 89.

For reflections on *jobbing*, 107.

For an instance of the folly of *speculating*  
in husbandry, 114.

COURSE

## 16.

## COURSE OF HUSBANDRY.

NO circumstance belonging to the provincial practice of this kingdom has been, to me, a matter of more surprize, than the SUCCESSION OF CROPS, in the prevailing practice of this district.

The GENERAL PRINCIPLE of management is that upon which every middlesoiled district ought to form its practice: namely, that of CHANGING THE PRODUCE, from grafs to arable crops, and from grain to herbage.

But whether the MINUTIÆ of practice, established in the district under survey, be eligible in every other middlesoiled district, I mean not here to say. I will endeavour to give a faithful register of the practice, and leave the reader to adopt the whole, or such part of it as may be found eligible in his own situation.

In

In the prevailing practice of the district ;— a practice whose origin I have not been able to trace, having been prevalent in the inclosed townships, I understand, time immemorial ;—the course of management is this :

The land having lain six or seven years in a state of SWARD,—provincially “ TURF,”—it is broken up, by a single plowing, for OATS ; the oat stubble plowed two or three times for WHEAT ; and the wheat stubble winterfallowed, for BARLEY and GRASS SEEDS ;—letting the land lie, during another period of six or seven years, in HERBAGE ; and then, again, breaking it up, for the same singular succession of ARABLE CROPS.

There are men, however, who object to this practice, arguing that the soil cannot be kept sufficiently clean under this course of management ; and on the lighter lands, on the forest side of the district, it is become prevalent to clean the soil, for barley and grass seeds, by a TURNIP FALLOW ; a practice which has spread itself, more or less, over the whole district. But the turnep crop, as will be shewn under the head TURNEPS, is losing ground, on the stronger soils ; on which,  
 nine

nine acres of ten are kept as regularly under the course of

Turf,  
Oats,  
Wheat,  
Barley,  
Turf,

as the lands of Norfolk are under the Norfolk system of management.

For reflections on this extraordinary course, see MIN. 19.

## 17.

### SOIL and its MANAGEMENT.

THE SPECIES OF SOILS have already been mentioned, in describing the district at large; the prevailing species being a DEEP SANDY LOAM; varying, however, in strength and productiveness: but, taken throughout, few districts can equal the district of the present station, in uniformity of soil; the variations in productiveness being frequently occasioned by

The

The **SUBSOIL**, which, though likewise remarkably uniform, is not altogether so. Beds of *sand*, and thin seams of *gravel*, are found in different parts of it; and a *red clay*,—provincially “marl,”—in others; but the prevailing subsoil is a *sandy loam* or brick earth; varying, like the soil, somewhat in strength.

This variation of subsoil is a natural cause of variation in the productiveness of the soil: water, imbibed by the absorbent strata, and checked in its course by the retentive, is pent up, and forced toward the surface; rendering the soil cold and ungenial.

Nevertheless, **UNDERDRAINING** found its way, late, into this district. Its first appearance in it was upon *this* estate, about thirty years ago; when some men from the Morelands of Staffordshire, into which it is probable the art had travelled out of Lancashire, brought it into this country.

Its *establishment* here, was probably owing to a mere circumstance. A farmer in the neighbourhood, struck with this novel practice, prevailed upon one of his labourers, who was a clever fellow at a “*dyche*,” to go and see these “foreigners” at work. He  
 went,

went, caught their art and their tools in his eye; brought them both away with him; got tools made; commenced "fougher;" and still remains the most experienced of the district: though, from him, several others have taken up, and long followed, the business; so that, in the course of a few years, most of the principal farms have been "gone over:" that is, have received the benefits of this cardinal improvement.

Thus genius and judgement, when happily joined, are valuable, even in a ditch. OLD SAMUEL, who is surnamed CLEVERDYCHE, and from whom I have these particulars, is, in truth, a genius of the first cast. See MIN. 106.

It is observable, however, that previous to the introduction of the present art, a species of underdraining had been practised in this district,—with THREE ALDER POLES; which have frequently been found, not by old Samuel only, but by other experienced foughers, buried in very wet boggy patches, one upon two, in the triangular manner; forming a kind of pipe in the center.

But it does not appear, by the situations in which these poles are found, that the modern

## 17. MIDLAND COUNTIES. \ 191.

art of "killing springs," as it is termed, was known to the ancient foughers.

The MATERIAL of foughing made use of by the Morelanders was *wood*: and old Samuel continued to drain with this material for many years. But finding, that, in the course of twelve or fourteen years, the springs broke out again, he has not, for many years, used wood; except in very difficult cases; and then not alone. He reckons twelve or fourteen years to be the longest duration of wood drains; let them be ever so well made.

The uses of wood were, therefore, superseded by *stone*; pebbles—provincially "bowlders,"—picked off the arable land; the only stone the country affords; and better stones for the purpose need not be had. With these stones, the principal part of the effective drains now in the country have been done. The method of forming these drains will appear in MIN. 106.

*Sod* or "turf" drains have likewise been introduced into this district; but thro' a different channel; and in a manner which ought not to be passed unnoticed; as it shews what may be expected from the experience  
and

and example of the superior class of professional husbandmen, assisted by the spirited encouragement of landed gentlemen.

Some twenty years ago, Mr. William More of Thorpe, in *this* neighbourhood, having observed, in a distant district, this method of draining, mentioned it to his landlord, the late Mr. INGE of Litchfield (whose character, as a landlord, and as a magistrate, was an ornament to his country), and intimated his desire to make a trial of it. The reply was,—“Send for a man, and I will set him to work; and if you think it will answer, you may then employ him; if not, I will allow you his expences.” A man was sent for, and the soil being found proper for this mode of draining, he was employed some length of time; the tenant paying his wages; the landlord, the expences of his journey.

From Thorpe this method of underdraining travelled into Leicestershire; where Mr. PAGET, a superior manager of the highest class of yeomanry, made himself master of the art, taught it to his labourers, practised it on an extensive scale upon his own estate, and has sent young men, of his instructing, into various districts as sod-drainers: even *this*  
neigh-



neighbourhood has, now, its fod-draining done by men from that quarter.

How fortunate for rural affairs, when genius becomes assisted by science and self-practice! What may not be expected from professional men of this description!

The outline of the method of forming fod-drains, here, is this: The upper part of the trench is opened with a common spade, nine to twelve inches wide at the bottom, and to a depth suitable to the given situation; leaving it with a smooth, even bottom: in the middle of which a narrow channel is sunk with a draining tool\*, and cleared with a scoop, to a depth proportioned to the firmness of the substratum, in which it is made; leaving a fair even "shoulder" on either side; on which shoulders the first spit or fod is laid, with the grassside downward, and, being trod down firm and close, the trench is filled up with the excavated mould.

If the subsoil be too tender to bear the fod, or of too loose and crumbly a texture to stand firmly without "running in," the wide trench is sunk down to the required depth, and shoulders formed with fods, cut square, and set firmly

\* See NORF. ECON. MIN. 2.

firmly on each side of the bottom of the trench; leaving a channel three or four inches wide between them; and laying the inverted sod upon these artificial shoulders.

The *expence*, in either case, about a penny a yard; which, being the *whole* expence, is very low.

Nevertheless, the *duration* of sod-drains, if the substrata be sufficiently firm, appears to be much longer than those of wood, and, perhaps, equal, in some situations, to those of stone.

Mr. More showed me some, which had been made upwards of twenty years, and which appeared to be quite perfect, acting, in wet weather, as well now as they did the first year. On cutting through some of these old drains, and examining them carefully, he found the sod had united intimately with the mould of the subsoil, into one firm mass; forming a regular arch; the pipe, so far from being warped up or even fouled, was wider than when it was made. Polecats and other vermin burrow in these drains:—this, reason suggests, would, in making their inner chambers, be liable to close the pipe. Moles are, in theory, still more formidable enemies. But reason and theory cannot set aside facts.

Mr,

Mr. Paget, likewise, having occasion to make some additional drains in a ground which had been fod-drained, some ten or twelve years, found, in cutting across the old drains, that they were in a state of high preservation.

FALLOWING. The prevailing fallow of this district is the *pin-fallow*, for barley (see the article BARLEY) : the *summer fallow* is rarely attempted ; and the *turnep fallow*, as has been intimated, is confined, at present, to the practice of a few individuals.

If fallowing can be dispensed with in any case, it may be under the management of this district, where only three arable crops are taken before the land be laid down again to grass. But even under this management, much of the land is foul and unproductive, through the want of being fallowed.

And it is a fact, which ought not to be concealed, that one of the first managers in the district is averse to the pin-fallow practice. His argument is strong. " See what a piece of seeds (raygrass and the clovers) after a turnep fallow will do. It will require a cow and perhaps five or six sheep an acre to keep it down ; especially in the spring when grass

is valuable. But look into a piece of ten or twelve acres of turf, after PINFALLOW, and you won't see, perhaps, more than five or six cows and a few straggling sheep in it : with some parts eaten as bare as a common, and others scarcely touched."

For an instance of practice in *summer fallowing*, see MIN. 18.

For a proposed improvement of the *pin-fallow*, see MIN. 19.

For the origin and cause of *high ridges*, see MIN. 21.

For an instance of practice in *surface draining*, 32:

For instance of practice in the reclaiming of pit places, 35.

For instance of practice in *underdraining*, see 106.

For instance of the efficacy of *sod drains*, see 109.

## MANURES

## 18.

## M A N U R E S

AND THEIR

## M A N A G E M E N T.

THE SPECIES OF MANURE made use of, here, are DUNG, LIME, and what is called "MARL\*."

DUNG is become, in this neighbourhood, an extravagant species of manure. I have found it nowhere else so highly valued. Half a guinea a load is not an uncommon price. The load, however, is large: that of a waggon, with five horses. Nevertheless, the price

O 3 is

\* The CORES OF HORNS, crushed in a mill, have been used in this district; but with what success I have not learnt. As an animal production, there can be little doubt of their efficacy: the only objection to them lies in the difficulty of reducing them.

is a strong evidence of the strength and spirit of the farmers of this district. The gardens of Tamworth \* may, however, be, in some measure, the cause of this extreme dearth.

In the MANAGEMENT OF DUNG, one circumstance, chiefly, requires to be particularized; the method of *spreading* is on the land.

In the ordinary practice of the kingdom, dung is set upon the land in hillocks, and spread, afterward, by a man standing on the ground. But, here, the prevailing custom is to spread it out of the carriage, as it is brought into the field; by a man or men, standing on the carriage.

For the minutiae of this practice, see MIN. 12.

For farther observations on it, see MIN. 13.

LIME is, here, in high estimation, among farmers in general; though some few individuals object to it.

In the ordinary practice of the district, a fallow is seldom made without being dressed with lime; under an idea that it "mellows" the soil and makes it "work well," while in tillage; and "sweetens," improves the *quality* of the herbage, when laid down to grass.

Unfor-

\* See page 17.

Unfortunately, however, for the district of the station, no calcarious substance has yet been discovered within it, to supply it with lime, in quantity as a manure\*: for which purpose it is fetched, into *this* neighbourhood, eighteen or twenty miles.

There are two *species of lime* in use: the one burnt from a stone of singular hardness, the other from more common limestones: the first is of singular strength as a manure; the latter of a more common quality. The one, I believe, is peculiar to some hillocks in Derbyshire, on the northern skirts of the Charnwood hills; the other is common to that quarter and to the west of Staffordshire: the former is called *Breedon* lime, the latter *Ticknall* or *Walsal* lime, from the names of the places in or near which they are principally burnt.

The nature of the BREEDON LIME is a fit subject of enquiry.

A general description of it will appear in MIN. 2. and an experiment made with it, in MIN. 100. All that remains to be given in

O 4

this

\* Limestone is found on both sides of the Anker, in the neighbourhood of Tamworth; and by a proper search, might perhaps be found in sufficient quantity to be profitably burnt into lime.

this place, is a minutial description, and the analysis, of the stone.

The prevailing species, of which the lime may be said to be made, is of this description : The *colour*, of the surface formed by the natural seams or fissures, is a red or strong flesh-colour; of that of old fragments, a lighter flesh-colour; of freshbroken fragments, a lighter blush. The *contexture* uniform; breaking with rough surfaces; extremely hard, and *close*, resisting acids in an extraordinary manner; the muriatic acid standing some time on its surface, before it take effect! and, when pounded, dissolves slowly and *quietly*. Nevertheless, under the hammer it flies as the St. Vincent stone. See GLO. ECON.\*

One hundred grains contain only three grains of indissoluble matter,—a red brick-dustlike powder, with a few rustlike fragments. Nevertheless, the tincture of galls produces no effect on the solution; nor does the smell, in dissolving, detect any thing of a chalybeate

\* It is a noticeable circumstance, however, that notwithstanding the resemblance between these two fossils, the LIME from one is *white* as snow, from the other (now under notice) the colour of *wood ashes*! and this notwithstanding the *redness* of the stone.



chalybeate quality : an alkaline solution throwing down a pure white calcarious matter.

Another specimen of a still higher red—a direct rust colour—and which is suspected to be a species of iron stone, proves, under analysis, to be of the same quality as the main rock ; except that it contains a greater proportion of indissoluble fragments.

Hence, it is more than probable, the idea, that Breedon lime contains something of an iron quality, is void of foundation : an idea, however, which deters some sensible men from using it.

THE MANAGEMENT OF LIME, in this district, is entitled to singular praise. In the common practice of the district, the load heaps are generally *watered*, as they are thrown down from the waggon ; and always *turned over*, to complete the falling more effectually. See YORK. ECON. vol. i. p. 350.

For an instance of this practice, see MIN. 3.

Another economical practice, in the management of lime, is equally entitled to notice. If a quantity of lime be fetched in autumn or the early part of winter, to be used in the spring, when team labour is more valuable, it is thrown up into a regular rooflike heap

heap or mound, and *thatcht* as a stack! a small trench being cut round the skirts to catch, with an outlet to convey away, rain water. By this admirable precaution the surface of the heap, perhaps to a considerable depth, is prevented from being run to a mortarlike consistence by the snows and rains of winter, and thereby rendered in a manner useless as manure. See YORK. ECON. v.i. p. 349.

MARL. The red earth which has been set upon the lands of this district in great abundance, as "*marl*,"—is much of it in a manner destitute of calcarious matter; and, of course, cannot, with propriety, be classed among MARLS.

Nevertheless, a red fossil is found, in some parts of the district, which contains a proportion of calcarious matter.

The marl of CROXALL (in part, of a stonelike or slatey contexture, and of a light red colour) is the richest in calcariosity: one hundred grains of it affording *thirty grains* of calcarious matter; and seventy grains of fine impalpable *redbarklike* powder\*.

And

\* This marl is singularly tenacious of its calcarious matter; dissolving remarkably slowly. One hundred grains,

And a marl of **ELFORD** (in colour and contexture various, but resembling those of the **CROXALL** marl) affords near *twenty grains* :

Yet the marl of **BARTON**—on the opposite side of the Trent—though somewhat of a similar contexture, but of a darker more dusky colour—is in a manner destitute of calcariosity ! one hundred grains of it yielding little more than one grain—*not two grains* of calcareous matter. Nevertheless the pit, from which I took the specimen under analysis, is an immense excavation, from which many thousand loads have been taken.

• And the marls of **THIS NEIGHBOURHOOD** (which mostly differ in appearance from those described, having generally that of a bloodred clay, interlayered, and sometimes intermingled, with a white gritty substance) are equally poor in calcariosity.

One

grains, roughly pounded, was twentyfour hours in dissolving ; and another hundred, though pulverized to mere dust, continued to effervesce twelve hours ; notwithstanding it was first saturated with water, and afterward shook repeatedly. The Breedon stone, roughly pounded, dissolved in half the time ; notwithstanding its extreme hardness.

One hundred grains of the marl of STATFOLD—(which I believe may be taken as a fair specimen of the red clays of this quarter of the district) afford little more than *two grains* of calcarious matter \*. Yet this is said to be “famous marl;” and, from the pits which now appear, has been laid on in great abundance.

I do not mean to intimate that these clays are altogether destitute of fertilizing properties, on their first application. It is not likely that the large pits which abound, in almost every part of the district, and which must have been formed at a very great expence, should have been dug, without their contents being productive of some evidently, or at least apparently, good effect, on the lands on which they have been spread.

I confess, however, that this is but conjecture; and it may be, that the good effect of the marls, first described, being experienced, the *fashion* was set; and, the distinguishing quality being unknown, or not attended

\* Lodged, not in the substance of the clay; but in its natural cracks or fissures.

tended to, marls and clays were indiscriminately used.

The most interesting fact that can be brought home, respecting these clay pits is, that they were made, chiefly, by the last generation; and that the present generation are experiencing, or believing that they experience, an evil effect arising from their produce: the fertilizing quality of which (if it ever existed) being now spent, the dead clay remains a clog to the native soil; rendering it tenacious, and difficult to work.

This is at least the opinion of intelligent professional men; and the idea, I believe, is founded in fact. LIME is found to do away this evil effect; and this may account for the spirit of liming in the present generation.

On the southern banks of the Anker, is found a GREY MARL; resembling, in general appearance, the marl of Norfolk, or rather the fullersearth of Surrey. In contexture, it is loose and friable.

This earth is singularly prodigal of its calcareosity. The acid being dropped on its surface, it flies into bubbles as the Norfolk marl. This circumstance added to that of a  
striking

striking improvement which I was shown as being effected by this earth (see MIN. 89.) I was led to imagine that it was of a quality similar to the marls of Norfolk.

But, from the results of two experiments—one of them made with granules formed by the weather, and collected on the site of improvement, the other with a specimen taken from the pit—it appears that one hundred grains of this earth contain no more than *six grains* of calcarious matter! the residuum a creamcoloured saponaceous clay, with a small proportion of coarse sand.

Hence it is evident, that the acid applied superficially, as a TEST, *is no guide whatever* to the intrinsic quality of calcarious substances. The marl of Hall End appears, by the acid of sea salt, used as a TEST, to be of tenfold strength to that of Croxall; but, by the same acid, used as a menstruum, the latter proves to be of fivetimes the strength of the former: while the Breedon stone, which appears to be noncalcarious to the acid, as a TEST, proves, on ANALYSIS, to be almost purely calcarious\*.

For

\* This by way of caution to those who may have occasion to search for calcarious substances. The Breedon

18. MIDLAND COUNTIES. 207

For an account of the *Breedon lime*, see MIN. 2.

For an instance of practice in the *management of lime*, 3.

For the method of *spreading dung* out of carts, 12.

For an *experiment* with *dung* on fallow for barley, 18.

For observations on *spreading dung* out of carts, 18.

For an incident of *plowing in turneps* as a manure, 34.

For an instance of *dung* being *too dry* to digest, 45.

For an instance of *watering a dung heap*, 47.

For practice and price, of *mixing manures*, &c. 50.

For reflections on *growing aquatic manure*, 52.

For another instance of *watering dung*, 57.

For an instance of collecting *compost*, 86.

For an account of the *marl* of North Warwickshire, 89.

For

Breedon stone by merely touching its natural surface, in the usual way, with the acid, might be passed as non-calcareous. It is observable, however, that if the surface be scraped, so as to loosen some of the particles into a powder, it instantly yields to the acid.

For instance of growing turneps on a *soil heap*, 95.

For *experiment* with *lime* for barley, 100.

For further observations on *Breedonlime*, 103.

For instance of *lime* used as a *topdressing*, 108.

For the effect of *aquatic manure* on turneps, see MIN. III.

## 19.

### SEMINATION.

IN THE SEED PROCESS of this district, though there is nothing particularly censurable, there is little to praise. *Broadcast* may be said to be the universal mode of sowing: though, of late years, *drilling*, a process *new* to *this* quarter of the kingdom, has been tried by a few individuals. With respect to PLANTING or SETTING, by hand, I met with only one instance, and that with beans.

In finally ADJUSTING the surface after sowing, the Midland farmers are entitled to  
com-



commendation. Barley lands are *clotted*, with clotting beetles ; which, on strong land, are perhaps much preferable to a roller : and oatlands “ *turfed* :”—that is, the sods torn off the plits by the harrows, and lying on the surface, probably with their grass sides upward, and of course in a state of vegetation, are thrown, by hand, or with forks, into hollows, with the grass side inverted : thus tending to neatness, cleanness, and the relief of the infant crop ; while the expence is inconsiderable\*.

For a convenient method of *preparing the surface of a whole-furrow seed-plowing*, see MIN. 20.

For an instance of *mice* hoarding the *seed*, 26.

For an evidence of the propriety of *sowing the whole furrow* the day it is plowed, 40.

For observations on *sowing by the trees*, 82.

For further observations on the *same subject*, 90.

For opinions on the *change of seed*, 91.

VOL. I.

P

CORN

\* By observation, in my own practice, eleven acres took ten womens' daysworks, or about sixpence anacre.

## 20.

## C O R N   W E E D S.

THE VEGETATING PROCESS of the MIDLAND DISTRICT consists, merely, in HANDWEEDING; the use of the HOE being in a manner unknown to farm labourers, and never attempted by their wives or children (see GLO. ECON.). Turneps are the only crop which is hoed; and this is generally done by gardeners; or by men who make a trade and mystery of it. See the art. TURNEPS.

The ARABLE WEEDS most noxious, in this district, are the following. They are divisible into three classes, agreeably to the states of aration, in which they are, respectively, most conspicuous; as those of

Fallow,   Corn,   New ley.

## FALLOW WEEDS.

<i>Provincial.</i>	<i>Linnean.</i>	<i>English.</i>
--------------------	-----------------	-----------------

Twitch,—*tritium repens*,—couchgrass.

Black twitch,—*festuca duriuscula*,—hard  
fescue.

Running

<i>Provincial.</i>	<i>Linnean.</i>	<i>English.</i>
	Running twitch,— <i>agrostis alba</i> ,—creeping bentgrafs.	
	Common thistle,— <i>ferratula arvensis</i> ,—common thistle.	
	Boar thistle,— <i>carduus lanceolatus</i> ,—spear thistle.	
	Docks— <i>rumex crispus</i> *,—curled dock.	

## CORN WEEDS.

Rough cadlock,— <i>sinapis arvensis</i> †,—wild mustard.
Smooth cadlock,— <i>brassica napus</i> ,—wild rape.
Fathen, or wild spinage,— <i>chenopodium viride</i> , redjointed goosefoot.
Dea nettle, or wild hemp,— <i>galeopsis tetrait</i> , wild hemp.

P 2

*carduus*

\* In this country, an instance of practice occurred to me, which is well entitled to a place in this register: that of employing a woman to follow the plow, especially in FALLOWING, to pick up the root weeds exposed in the furrow; more particularly the DOCK. When root weeds are abundant, the practice is evidently eligible: the expence is no object, and the benefit, in some cases, may be almost invaluable. MAJOR BOWLES of Elmhurst, near Litchfield, is entitled to the honor of this *thought*.

† With a few plants of the WILD RADISH, *raphanum raphanistrum*.

Provincial.	Linnean.	English.
	<i>carduus lanceolatus</i> ,	spear thistle.
	<i>ferratula arvensis</i> ,	common thistle.
	<i>carduus palustris</i> ,	marsh thistle.
	<i>rumex crispus</i> ,	curled dock.
Dog fennel,	<i>anthemis cotula</i> ,	maithe-
		weed, or stinking camomile.
——,	<i>matricaria suaveolens</i> ,	sweet-scent-
		ed camomile.
Sow thistle,	<i>sonchus oleraceus</i> ,	common
		fowthistle.
Hard iron,	<i>ranunculus arvensis</i> ,	corn crow-
		foot.
Lap love,	<i>convolvulus arvensis</i> ,	corn con-
		volvulus.
——,	<i>polygonum convolvulus</i> ,	climbing
		buckweed.
Corn mint,	<i>mentha arvensis</i> ,	corn mint.
	<i>carduus crispus</i> ,	curled thistle.
Tare,	<i>eryum hirsutum</i> ,	two-seeded tare.
——,	<i>tetraspermum</i> ,	four-seeded tare.
Hairof,	<i>galium aparine</i> ,	cleavers.
Willow weed,	<i>polygonum pennsylvanicum</i> ,	—
	<i>pale perficaria</i> .	
Goose tansy,	<i>potentilla anserina</i> ,	—silver-
		weed.
	<i>infilago farfara</i> ,	coltsfoot.
		Nettles,

Provincial.	Linnean.	English.
Nettles,	<i>urtica dioica</i> ,	common nettle.
Poppy,	<i>papaver dubium</i> ,	longsmooth-headed poppy.
Golds,	<i>chrysanth. fegetum</i> ,	corn marigold.
Cockle,	<i>agrostemma githago</i> ,	cockle.
Mellilot,	<i>trifolium mellilotus</i> ,	mellilot.
Groundfil,	<i>senecio vulgaris</i> ,	groundfil.
	<i>thlaspi bursa past.</i>	shepherdspurse.
Begars needle,	<i>scandix pecten-veneris</i> ,	—
		shepherds needle.
Chicken weed,	<i>alsine media</i> ,	chick weed.
	<i>euphrasia odontites</i> ,	red eyebright.
	<i>thlaspi arvenfis</i> ,	common mithridate.
	<i>scabiosa arvenfis</i> *	corn scabious.

## CLOVER WEEDS.

<i>filago germanica</i> ,	common cudweed.
<i>cerastium vulgatum</i> ,	— common mouse-ear.

P 3

*geranium*

\* This inveterate enemy of arable crops (see YORK. ECON.) is not common to the district. SUTTON AMBION, the bloody scene on which the brunt of the battle of BOSWORTH FIELD was probably fought, is the only spot on which I have found it; and there it is singularly prevalent. The wheat crop, in 1785, was in a manner destroyed by this weed, encouraged in its mischiefs by the dryness of the season.

Provincial.	Linnean.	English.
	<i>geranium dissectum</i> ,	jagged cranesbill.
	<i>carduus lanceolatus</i> ,	—spear thistle.
	<i>rumex crispus</i> ,	—curled dock.
	<i>sonchus oleraceus</i> ,	—common sow-
	thistle.	
	<i>ferratula arvensis</i> *,	—common thistle.

For an instance of the mischievousness of  
 “black twitch,” see MIN. 59.

For observations on the *couchy softgrafs*, 73.

For an instance of the shameful predomi-  
 nancy of *thistles* and *docks*, 76.

For an instance of *weeding* a wheat *stubble*, 77.

## H A R.

\* I met with an instance in this district, and in the practice of the first manager in it, of the COMMON CORN THISTLE being *drawn* out of new leys, with a docking iron, such as docks are usually drawn with; and although this operation is not found to be a *radical* cure, the first drawing, yet it weakens the roots very much; and, by continuing the practice a few years, is said to extirpate the plants. This I mention by way of hint to those who wish to ascertain, on their own particular soils and situations, the most eligible way of overcoming this most formidable enemy.

## 21.

## H A R V E S T I N G.

THE CORN HARVEST of this district, though it cannot be called, emphatically, a *corn country*, is not got in without some foreign assistance from whom are termed “peakrils” and “low country men :”—namely, men, and some women, from the Peak of Derbyshire, and the Morelands of Staffordshire. The wheat is much of it cut by these itinerants.

The HARVEST LABOURERS, of the district, are not hired for the *harvest month*, as in Surrey, &c.; nor for the *harvest*, be it short or long, as in Norfolk; but work by the day, as at other seasons of the year; and for the same *wages*, a shilling a day; but with the addition of full *board*, so long as the harvest lasts: and, in addition to this, each labourer who has been constantly employed through the summer, has a right, by custom, to the *carriage of a load of coals*, in autumn. It is

also a pretty common custom for farmers to let their constant labourers have their bread corn somewhat below the market price; more especially when corn is dear.

The *hours of work*, too, like the wages, are the same in harvest as in less busy seasons; and the same slow pace is too generally observed. No coming at four in the morning; no trotting with empty waggons; nor any personal exertion, whatever, betokening harvest; saving such as are stimulated with ale as strong as brandy!

The method of harvesting **SHEAF CORN**, whether *wheat* or *oats*, is, in this district, above par. In part it is new to me: **REAPING** being generally done by the "*threave*:"—seldom by the *acre*.

Athreave is twentyfour sheaves; each sheaf measuring a yard round, in the banding place; the string crossing the band in measuring. A better sized sheaf, for seasons and crops in general, could not, *perhaps*, well be fixed upon (see **GLO. ECON. ART. WHEAT.**)

The great difficulty, in reaping by the threave, lies in not being able to get the sheaves made up to the standard. The deviation,



viation, however, is on the right side : whereas, in reaping by the acre, it will always be on the wrong. For, in that case, it is the interest of the reapers to make large sheaves ; having thereby fewer bands and less binding. On the contrary, in reaping by the threave, it is their interest to make small sheaves.

Another conveniency arises from reaping by the threave : any number of hands may be scattered over a piece of corn, as circumstances may require, without the extraordinary trouble of measuring the land in this case. Each man sticks to his " throo," whether it consists of one or more lands, and sets up his own sheaves in one row of shucks, of twelve sheaves each : so that the trouble of ascertaining the number of threaves is inconsiderable.

The *price*, for *wheat*, is fourpence a threave, with beer ; provided the crop be tolerably good : if very thin, fivepence or sixpence is sometimes given : or such thin wheat is sometimes reaped by the acre ; at about six or seven shillings an acre. For *oats*, threepence is the common price.

In

In CARRYING sheaf corn, there is usually a loader to each pitcher. The buts are laid outward all round, as in Surrey and Norfolk; forming the load, not into a long square, but into a figure between that and an oval; binding it across and across, in three or four places.

The method of harvesting LOOSE CORN, whether *oats* or *barley*, is reduced, here, to the lowest degree of simplicity.

In Yorkshire, barley and oats are mown *inward*, against the standing corn, and harvested in sheaf.

In Kent and Surrey, they are mown *outward*, with a *cradle*, laying them so straight and neatly, they might be bound after the fithe; but are harvested loose. In cocking them, the Kentish farmers make use of *corn forks*; laying the ears all one way; preserving the same neatness and regularity, even to the stack; the outside course of which is laid with unbroken pitches, with the buts outward, having thereby a security nearly equal to that of sheaf corn.

In Norfolk, they are mown *outward*, with *bows*, fixed to the heels of the fithes; which,

which, however, do not lay them so neatly as cradles; but still the heads, if the crop stand anyway fair, lie one way, and the tails the other. There, too, the *corn fork* is used.

Here, they are mown *outward* with *naked fitches!* and cocked, or rather rolled into rough bundles, with common *hay forks!* and this, generally, two or three days before they be carried!! a crop of clover, a crop of barley, a crop of peas, a crop of oats, and a crop of beans and vetches, being harvested very much in the same manner.

Mowing barley and oats with naked fitches, and pulling them about with hay forks, have, to strangers, a slovenly and wasteful appearance. But with respect to cocking loose corn before the day of carrying, something, perhaps, may be offered in its favour.

It is true, that, in other districts, it is considered as very bad management to leave even a few cocks remaining only one night; under an idea that, if loose corn once get wet in cock, it is difficult to get it dry again, without a great waste of labour and corn. Nevertheless, experience shows that even a very heavy shower has not that evil effect in the practice of this country.

An

An incident in my own experience convinced me of the fact: I had, through neglect, a few oats in cock left out all night. Next day, much rain fell; but the succeeding day proving fine, they were got into very good order again, in this manner. The tops were first dried, by raising them up, light and porous, with the tines of a fork; so as to let the sun and air into them; and, when the tops were dry, the bundles were turned over, to air the bottoms.

In this manner, and without greater trouble, corn cocks are generally dried; though sometimes it will happen that they require to be pulled to pieces: in which case, there is, of course, considerable waste.

The Midland farmers have one very good plea for harvesting *oats* in this manner. For, by cocking them a few days before carrying, the labour and waste of turning is saved: besides, by being cocked while a portion of the sap remains in them, they are not so liable to be shed in cocking, as when they are disturbed in a dry parched state.

This practice, probably, took its rise in open common fields. Formerly, much of the district

district lay in that state; the soil being raised into high rooflike ridges. The furrows and skirts of the lands lay, of course, proportionably low; and the corn being thereby frequently deprived of the benefit of the sun and wind, it was found, by experience, most eligible to gather the corn into heaps, and place them upon the tops of the ridges. And this is the present practice of "field farmers." In a few days after cutting, the whole crop may be seen standing in pitchcocks, placed in close order, like strings of beads stretched along the ridges.

But notwithstanding this practice may be eligible where corn is mown with the naked scythe, and rolled up into rough porous bundles, it does not follow that it should be universally adopted. Were a Kentishman to leave his unruffled close piles exposed even to one heavy shower, he would find some difficulty to get them thoroughly dry again, without spreading them abroad.

An evil attendant of the Midland method of harvesting loose corn is, the increase of bulk which corn harvested in this way acquires, comparatively with the same quantity  
of

of corn harvested in the Kentish manner. More barnroom is of course wanted, and a greater number of loads are to be carried. Four loads an acre is no uncommon crop : five loads are talked of, and are sometimes carried. But the method of *loading*, and that of *barning*, both of them tend to increase this evil.

The method of CARRYING loose corn, here, differs from that of other districts, in having only *one* loader to *two* pitchers ; and in loading, not with the *arms*, but with a *fork* ; the loader standing in the centre of the load, and piling the corn loose and light around him. Thus the entire process tends to encrease the number of loads.

And the method of HOUSING is not calculated to do away the inconveniency. I never met with an instance, in this district, of a *horse*, or any other *animal*, being used on a mow.

RICKING, however, remedies the evil ; and in this district, where barnroom is more contracted than in some other, loose corn is pretty generally put into ricks.

In the *method of ricking loose corn*, nothing is noticeable ; excepting the last finish. To  
endeavour

endeavour to secure the stems from the pil-laging of sparrows, and other small birds, they are, generally, either "tucked" or "pared:" that is, either the loose ears, exposed on the outside, as many unavoidably are, in the method of harvesting above described, are doubled back, and thrust into the stem; or the entire stem is shaved with a fithe laid longway in the handle, or some other similar instrument: in some few instances I have seen the stems thatched, as the roofs.

On *ricking sheaf corn* a few particulars may be mentioned. Though built on a square frame, the stem—provincially the "wall,"—is not carried up square, as in Surrey and Norfolk; nor round, as in Gloucestershire; but in a form between the two; the corners of ricks being rounded off, as those of loads.

Large ricks being fashionable, and it being customary, in carrying up the stems, to *bind* with the ears, instead of the butts of the sheaves, they are of course liable to *slip*. This has taught the Midland rickers an admirable expedient, when any symptom of slipping, in carrying up the stem, is perceived, to pre-vent

vent the mischief; namely, that of laying *long green boughs* across the part affected: an excellent thought.

In setting on the *roof* of a sheaf corn rick, the Midland rickers are above par: laying the last course of the stem so as to project a few inches, and form a kind of cornice for the eaves of the thatch to rest upon, and to carry the drip clear of the stem. The middle is then filled in full and round; so that the butts of the outside sheaves hang downward.

This, though not peculiar to the district, is a rule which ought always to be observed, in forming a roof: for, in this case, if rain should happen to penetrate through the thatch, there is little fear of its doing, even the roof of the rick, much injury: every straw becoming a conductor to lead it to the surface.

Another commendable practice, in forming the roof of a sheaf corn rick, and which is new to me, is that of carrying it up without a *pitching hole*. A man sticks his heels into the roof, and stands with great ease and safety. This might well be copied by other districts: *holes* are dangerous; unless great care be  
used



used in making them up, and in thatching them securely. For if water enter, in this part, it finds its way directly into the heart of the rick.

The method of *securing corn ricks*, in a catching season, previous to their being thatched, is likewise entitled to notice. It is effected with "battins"—small trusses of straw—which are afterward used as thatch. A row being laid close, and pegged *securely* along the eaves, with their butts downward, others are laid (firmly but without pegs), as tiles or slates are laid on a roof, with their heads downward; spreading the ears (without untying the bands) so as to prevent the rain water from getting through between those which lie below: continuing, thus, till the ridge be reached.

Having plenty of these battins, in corn harvest, ready at hand, to cover a rick with, in catching weather, is a very great convenience. A rick of "zoothreave," eighteen or twenty loads, may be secured in a few hours: or, with plenty of hands, in half an hour.

The method of *thatching ricks* is also peculiar in this district, and requires to be men-

tioned. Instead of thrusting the ears of the straw into the roof, and spreading the butt outwardly as a security; the straw, in thatching, is laid on as the battins, with the ears downward, and of course outward (excepting the first course at the eaves), and is secured in its place, by pegs and hay ropes\*; passing horizontally from end to end of the roof; at the distance of twelve or fourteen inches from each other†.

For observations on *shucking* sheaf corn, 10.

For remarks on *reaping* by the threave, 75.

For reflections on *gleaning*, 80.

For further observations on *shucking*, 81.

## F A R M

\* Sometimes thatch is bound with *osier twigs*, which are much more lasting than hay bands (that are only *annuals*), in a simple ingenious manner. The small end is formed into an eye, like that of a with, and the thick end run into the roof, as a peg, thro' the eye of the succeeding twig.

† An inconveniency attends this method of thatching. A rick cannot be thatched, with propriety, until the roof has done settling. For if it settle after it is thatched, the straw is raised into puckers between the bands, and the water, of course, let in.

## 22.

## FARMYARD MANAGEMENT.

ON THE BARN MANAGEMENT of this district little requires to be said. The southern method of *thrashing*, and the *sail fan*, are in universal practice. I have, however, met with some two or three *machine fans*; and these, in the practice of the very first managers of the district: nevertheless, even the superior class of farmers, in general, still remain in the old dusty path.

CHAF-CUTTING, as it is pretty generally termed, but here provincially "*strawcutting*," —is in great use. Not, however, the ordinary practice of cutting *hay* and *straw* into what is, in most places, called *chaf* or *cutchaf*, but, here, more properly "CUTMEAT;" but by reducing *oats*, in *straw*, into this species of fodder; which is given, not to horses only, but to cattle; especially fatting cattle.

It is thought to give, not only fatness, but a fineness of skin, to all sorts of stock.

The CHAFBOX made use of, here, is of a peculiar construction. It unites, in some measure, the old single-hand machine, and the modern one with a wheel of blades. This, in use here, has a long upright knife; but feeds itself; by which means the cutter has both hands at liberty, for the knife. It is made at or near Birmingham, and sold at most of the market towns of the district. It is, however, somewhat complex; and fitter for a man who makes a business of "straw cutting," than for a farmer's servant.

The *price* of cutting, three farthings a heaped bushel; but it is cut extraordinarily fine.

The STRAWYARD MANAGEMENT, here, falls between the northern and the southern practices: *cows* are pretty generally *housed*, in the sheds that have been described: but *young stock* still remain in *open yards*; and some are kept out, in the *field*, a principal part of winter.

## MARKETS.

## 23.

## M A R K E T S.

THE PRINCIPAL MARKETS of the immediate DISTRICT of the STATION, are *Tamworth, Lichfield, Burton* ( on Trent ), *Ashby* ( De la Zouch ), *Atherston, Bosworth.*

The three first are good markets ; the last is almost in disuse ; though situated in the center of a fertile district ; a charming plot of country. But there is no manufactory, no navigation, nor any great road, within several miles of it ; its own road very bad ; with Ashby and Atherston on either side of it ; and LEICESTER within reach.

But the *metropolitan* market of the district is BIRMINGHAM, with the manufacturing towns of its neighbourhood. The produce of *this* district, whether of live stock or

grain, may be said to center eventually in Birmingham; which bears a similar relation to the market-towns of the country round it, as London does to those in its neighbourhood\*.

The more southern parts of LEICESTERSHIRE and WARWICKSHIRE, NORTHAMPTONSHIRE, &c. are influenced by the grand vortex. The fat cattle and sheep of these districts go chiefly to SMITHFIELD.

It may be right in this place, to take notice of a dispute which arose, during my residence in the district, between the townspeople of Tamworth and the hucksters of Birmingham: the dispute arising to little less than riot: the townspeople driving the hucksters out of the market.

This is an interesting subject. Markets are, or ought to be adapted to the mutual benefit of the producers, and the consumers at large :

\* Lately, a weekly market has been established at ROTHERHAM, in Yorkshire, to which fat stock is driven from the northern parts of LEICESTERSHIRE, &c. The buyers at this market are the butchers, not of the manufacturing towns of Yorkshire only, but of Lancashire.

large : but more particularly to those of the given town, and its neighbourhood. Mere market towns have no hucksters to supply them. They depend entirely upon the marketday for their supply : and if, in times of scarcity, hucksters from large towns repair to a country market, they may, in a few minutes, clear the market ; and leave the townspeople destitute of a week's provisions.

On the other hand, if hucksters be wholly precluded from buying up even the surplus of a country market, the market itself, and of course the townspeople, eventually, will be injured. The producer will, of course, endeavour to find out a market, where he can sell his produce, *on a certainty* ; without running the risque of having it to bring home, or of selling it at an under price to the *monopolizers* of the town. The market of course becomes badly served, and the ware, in consequence, inferior and dear.

The markets of Lichfield and Walsal (with many others in the kingdom) are therefore wisely regulated. They *open at eleven o'clock* ; but no HUCKSTER is permitted to buy until

Q 4

twelve :

*twelve*: so that the TOWNSPEOPLE have an hour to supply their wants. By this judicious regulation the markets are, eventually, served; and this, without injuring the town, in the first instance, by rendering its inhabitants liable to circumstances,

For a description of Belton fair, 1.

For a description of Fazeley fair, 13.

For a description of Tamworth fair, 15.

For remarks on the delivery of corn, 31.

For a description of Ashby stallion show, 37.

## 24.

### W H E A T.

THE SPECIES prevalent, here, is the "RED LANMAS;" the ordinary red wheat of the kingdom.

Of late years, the "ESSEX DUN,"—similar to the *Kentish white cobb* of NORFOLK, and the *Hertfordshire brown* of YORKSHIRE,—has been making its way into this district.

Those



Those who have given it a fair trial, like it, on account of its giving a great produce : but the millers are not yet reconciled to it ; though they give no sufficient reason for their dislike. But so it was in Norfolk, on its first introduction there : see NORF. ECON. vol. 1. p. 202.

CONE WHEAT was formerly grown in this district ; but is, at present, out of use.

SPRING WHEAT (*triticum æstivum*) is here cultivated, and with singular success ; owing principally to the *time of sowing* : the wane of April !

This proves that it is a species widely distinct in its nature from the *winter* wheats.

In the practice of a superior manager\* it was discovered, that by sowing early, as the beginning of March, the grain was liable to be shrivelled, and the straw to be blighted ; while that sown, late, as the middle or latter end of April, or even the beginning of May, produced clean plump corn ! effects directly opposite to those of winter wheat.

However,

\* Mr. PAGET of Ibsstock.

However, it appears to be at present (1789) growing into disrepute: the quality of the grain is found to be less valuable than that of Lammas wheat. Nevertheless, in some situations, and under some circumstances, I am clearly of opinion it may be highly eligible: more especially in a *turnep* country. It appears to me to be well entitled to the attention of the Norfolk farmers.

SUCCESSION. In the ordinary practice of the country, wheat succeeds *oats*! Perhaps, nine tenths of the wheat grown in the district is what is termed "brush wheat:" is sown on *oat stubble*—provincially "oat brush"—with a small proportion of "*barley brush*." A fact which a stranger riding through the district, previous to harvest, and seeing the fine crops of wheat which it produces, would not readily credit.

I met with a few instances of wheat being sown on *turf* of six or seven years lying; and with several on *clover ley* once plowed: also some of wheat after *turneps* \*. But the best crops

\* Westward of the Tame—the soil a light sandy loam,—it is the prevailing practice to sow wheat after *turneps*, fed off with sheep in autumn.

crops which this, or almost any other district produces, are sown after *summerfallow*. The practice, however, is confined principally to one leading man ;—Mr. PRINCEP of Croxall.

Nevertheless, viewing the district generally, the universal matrix of wheat may be said to be OAT STUBBLE ; of which, only, I shall treat.

**TILLAGE.** The soil process varies in the practice of different individuals. Some plow *once* lengthway, as the old turf was plowed for oats. Others plow *once* across, cutting the plits of the old turf at right angle ; afterwards gathering a bout, that is, laying two plits back to back ; in each interfurrow ; to drain more effectually the wide ridges, in which the lands of the district are chiefly laid. Others break the ground (provincially “work their brushes”—) by *two* plowings—the first across, the last lengthway : and some few by *three* plowings ; lengthway, across, lengthway.

The first is a filthy-looking, slovenly business ; though a common practice. The second, with the same labour, is infinitely preferable ; and, in a wet autumn, may be more eligible than breaking the ground by a greater number of plowings. When the  
season

season and other circumstances will permit, the last is, no doubt, to be preferred.

MANURE. The manure process likewise varies. If the turf has been recently manured, previous to the oat crop, or the soil otherwise in good heart, the wheat is frequently sown without manure. When manure is used, *dung*—provincially “muck”—is the prevailing species. If the ground be only once plowed, the muck is generally laid upon the stubble, and plowed under, with the one plowing. If the ground be broken, it is common to lay it on the cross plowing, and plow it under with the seed plowing.

One circumstance in the manure process for wheat requires to be noticed. It is common, though not universal, to set the muck upon the land in a raw long strawy state; carrying it immediately from the yard to the field, without having been previously turned up and digested. This is probably a dreg of the common field husbandry; in which the yard muck was, perhaps judiciously, left unmoved; with the intent that its strawiness might prevent the too fallow mould of land, summerfallowed every third year, from being run together by heavy rains (see MIN. 21).

But,

But, in pinfallowed inclosures, the twitch alone is too frequently more than adequate to this intention ; and to throw additional incumbrances in the way of the harrow is certainly reprehensible.

**SOWING.** The *time of sowing*—October. Little is sown before new Michaelmas : and if the season be favourable, little after the close of October.

*Preparing the seed* is not universally attended to. Much seed is sown without preparation ; which, I understand, is of modern date, as a practice, in this district. The preparation, in the best esteem, is the common one of swimming in brine, and candying with lime.

The *mode of sowing*, broadcast, and generally above furrow ; the soil being seldom got fine enough to plow in the seed.

The *quantity of seed*, pretty universally, three bushels an acre ; without much regard to the time of sowing.

**VEGETATING PROCESS.** *Handweeded* : no *boing* of wheat in this district.—For opinions on *eating* wheat with sheep, and on *harrowing* wheat in the spring, see MIN. 113.

HAR-

For an incident on *sowing* the whole furrow of a *clover ley*, 40.

For remarks on the nature of *blights*, 65.

For an instance of *blight*, 74.

For remarks on *reaping* by the threave, 75.

For an instance of *weeding* wheat *stubble*, 77.

For remarks on *gleaning*, 80.

For further observations on *sbucking*, 81.

For the effect of *sowing* wheat on *clover ley* immediately after the plow, 96.

For opinions on *eating* and *barrowing* wheat, see MIN. 113.

## 25.

### B A R L E Y.

THE SPECIES OF BARLEY in cultivation, here, are

HORDEUM *zeocriton*; LONGEARED BARLEY,

HORDEUM *distichon*; SPRAT BARLEY.

The latter is the old stock of the country; the former of late introduction; of not more, I understand, than about fifty years standing. The sprat is deemed more hardy, and requires

quires to be sown more early; the longear to be the better yielder. The sprat is thought (by maltsters) to make the best keeping beer; the longear to be "freer"—to operate quicker—both in the malthouse and the cellar.

The longear is not unfrequently had out of Kent, under the name of THANET BARLEY; which, at present, is in the first estimation.

SUCCESSION. In the ordinary practice of the district, barley succeeds *wheat*. Where *turneps* are grown, it succeeds that crop.

It is observable, however, that, on the strong lands of *this* district, the crop, after wheat, is less productive, and much less *certain*, than it is after turneps\*. But the same circumstance is observed in Norfolk, where the soil is much lighter. See NORF. ECON. v. i. p. 237.

Barley is likewise sown, and of late years not unfrequently, on *turf*; and with good success †.

#### TILLAGE.

\* On the lighter lands, on the skirts of the Forest, it is said to answer perfectly well after turneps. See MIN. 92.

† One superior manager has sown barley on turf, for more than twenty years; getting extraordinary crops from this practice.

**TILLAGE.** *After wheat*, the soil is winter-fallowed,—provincially “pin-fallowed” — by three plowings: the first, lengthway, in November, &c.; the second across, in March, &c.; the last, the seed plowing, lengthway. Between the two last plowings the soil is harrowed, and the twitch shook out with forks, and left, loose and light, on the surface, to die; being seldom, in common practice at least, either burnt or carried off. If the weather prove dry and parching, this may be an easy way of *checking* the foulness.

*After turneps*—the soil has generally three plowings: for the turneps being mostly folded off with sheep, the soil, naturally of a close texture, is thought to receive a degree of compactness, ill suited to the fibrils of this delicate plant, until it be broken, and rendered porous, by tillage.

**SOWING.** The *time of sowing*, if the weather will permit, is the two last weeks in April and the first in May: the Midland farmers going entirely by the ALMANACK—if they can—not by the SEASON.

The

\* PIN-FALLOW. The origin of this term I have not learnt: it appears to be synonymous with WINTER-FALLOW, or BARLEY FALLOW.

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The *quantity of seed*—two bushels and a half to three bushels an acre; and, in the practice of some men, so much as four bushels; though, perhaps, unnecessarily.

The *method of sowing*—broadcast; mostly above; but sometimes, if the land be got very fine, the seed is plowed under.

*Adjusting.* If the harrow leave any clods un-reduced on the surface, they are broken with the clotting beetle by women, &c.; and if any twitch be pulled up in harrowing, it is shook out loose, with forks, and left on the surface to wither. Both of them eligible operations—where they are wanted.

The WEEDING,

The HARVESTING, and

The YARD MANAGEMENT of barley appear, foregoing, under these general heads.

MARKETS. The *Burton* breweries; and the *manufacturing towns*; where incredible quantities of malt are said to be consumed.

PRODUCE, —extraordinarily large. *Seven* quarters an acre is no unusual crop: *eight* quarters have been grown. One superior manager frequently grows six or seven quarters round. *Four to four and a half* quarters an acre may be taken as the par produce.

For

25. MIDLAND COUNTIES. 243

For an experiment with barley on *clover ley*, see MIN. 9.

For an incident on *plowing in seed* barley, 41.

For instances of barley badly *harvested*, 83.

For a detail of my own practice, 90.

For observations on the *time of sowing*, 90:

For instances of barley miscarrying, *after turneps*, 92.

For instance of frost's *ripening* barley, 93.

For a further detail of my own practice, 102.

For the result of this practice, 117.

For instances of the bad quality of barley, see MIN. 117.

26.

O A T S.

THE SPECIES OF OAT at present in esteem is the "DUTCH OAT"—the same or similar to the *Friezland oat* of Yorkshire. The POLAND OAT, which was the favorite, is going out of repute; on account of the thickness of its skin.

R 2

The

The SUCCESSION, uniformly, *turf*,—oats.

The TILLAGE,—one plowing in February, March, or April.

SOWING. *Time of sowing*, latter end of March and beginning of April. *Quantity of seed*,—four to five bushels. The same observation, with respect to the seed of oats, has been made here as in Yorkshire; the produce being in proportion to the quantity of seed: hence six or seven bushels are sown in the practice of some individuals. *Sow* broadcast:—cover with the harrow; *adjust* by turfing. See general head SEMINATION.

For WEEDING,—HARVESTING, and YARD MANAGEMENT, see the general heads.

MARKETS. Notwithstanding the quantity of oats grown in the district, a principal part of them is expended on *farm horses*! others go to the *inns* of the district, and the surrounding country.

PRODUCE. Sward being the matrix, no wonder the produce is abundant. *Six quarters* an acre may be considered as the par produce of oats on turf, in the Midland District.

For observations on the *time of sowing*, see MIN. 82.

For remarks on *harvesting*, 82.

PULSE.

## 27.

## P U L S E.

IN THE INCLOSURES of the Midland District, little of this class of grain is cultivated.

BEANS and DILLS (a species of large vetch; the Yorkshire *fitches*. See YORK. ECON.) are the prevailing crop.

The only circumstance of their culture which is entitled to notice, belongs to the SEED PROCESS.

In every other district, in which I have hitherto observed, BEANS are either sown on the whole plot, and *barrowed in*, or are set or *planted* by hand; but, here, the prevailing practice, at present, is to *sow them on stubble*—generally wheat stubble—and to *plow them under!* with a thin *flat* furrow: afterwards sowing the DILLS, and harrowing them in.

If beans alone be the crop, the surface, in

the practice of some, is nevertheless harrowed, as fine as if they had been sown abovefurrow ; in others, the plits are left whole.

If the ground be broken, as a pin-fallow, —the beans and dills are sometimes both of them sown *underfurrow*, and plowed in together.

It is observable that beans, plowed under whole furrows, rise principally in the seams ; but some of them through the furrows or plits. They have even been observed to force their way through a footpath, though trodden as firm as a plaster floor !

The disadvantage of plowing beans under whole furrows arises principally, it is understood, in their lying hollow ; thereby spending their first and main effort in running under the furrows ; never, in this case, reaching the surface. Hence the use of turning the furrows as *flat* as possible. When the season will permit, *rolling* would, under this idea, be of essential service,

For HARVESTING beans, see the general article, HARVESTING LOOSE CORN.

## POTATOES.

## 28.

## P O T A T O E S.

THE SPECIES, or rather VARIETIES of potatoes have, of late years, undergone a total change, in this district.

The old varieties, formerly in cultivation, dwindling in produce, and being, at length, in a manner destroyed, by the disease of *CURLED TOP*,—two new varieties were introduced,—under the names of *GOLDFINDERS* and *GOLDENDABS*;—the former a yellow kidneylike root (but with a scurfy rind, not unlike that of the old russet potatoe); the latter of a similar colour but of a different form, being somewhat bellshaped. The consequence has been, the disease vanished with the old sorts, and is now (1786) and in *this* neighbourhood, where no other sort is in ordinary cultivation, in a manner forgot.

In 1789, I met with a similar instance in *Leicestershire*; where the “old red sort” was

entirely worn out with the disease ; while a white sort, now in cultivation, was “ *never known to curl.*”

In *Rutlandshire* I had ocular evidence of the same nature. Observing, in a large piece of potatoes, two stripes which were almost wholly curled, while the rest of the piece appeared to be free from the disease, I enquired into the cause of disparity ; and received in answer, without hesitation, that the healthy plants were “ *manleys*,” and the diseased stripes “ *rednosed kidneys* ;” which, heretofore, was the prevailing species ; but being no longer to be cultivated with any degree of success, a *new sort* was, some years ago, introduced under the name of the “ *manley*,” which still remains free from the disease.

These are evidences, and strong ones, that the disease of *CURLEDTOP* is *incident to varieties* ; and the circumstance of the *old sorts*, which have been in cultivation from the first introduction of potatoes into the island, being now almost wholly cut off by it,—renders it *probable* that the disease is incident to *declining varieties* of *POTATOES* ; as the *canker* is to declining varieties of *FRUIT*. See *GLO. ECON.* See also *YORK. ECON.* ii. 52.

The

The CULTIVATION of potatoes, in this district, though it does not require to be given in detail, throughout, is entitled, in several particulars, to notice.

SUCCESSION. Contrary to the practices of most other districts, potatoes, here, succeed *turf*: are planted, almost invariably, on *grass-land*.

SOIL PROCESS. The *plow* is seldom, if ever, used, here, in the cultivation of the potatoe crop. The soil is broken up with the *spade*: sometimes in two shallow spits, throwing the sward and the dung, if any be used, to the bottom; covering them, in the gardener's manner, with the under spit; but, generally, in one full spit; merely inverting the sward; fitting the spits to each other; leaving a smooth even surface of clear free soil.

PLANTING. On this surface the plants are *dibbled* very thick, about the middle of April \*.

The

\* Potatoes are sometimes grown two years together on the same land; and, in this case, *it is said* to have been found that dibbling in the sets, on the stale surface, as left, on taking up the first crop, or only levelled with the harrow, without a previous plowing or digging, is the most eligible method of putting in the second crop: this, however, by way of hint.



THE VEGETATING PROCESS consists in *hoing*, once, twice, or as often as circumstances may require; the crop, throughout, being mostly, though not always, managed in a gardenly manner.

The crop is TAKEN UP with *forks*, in the gardener's method, about the middle of October: the *price* of taking up is according to the crop; generally, I believe, from 1d. to 2d. a bushel.

PRESERVING. The method of laying up potatoes, here, is, universally, that of "camping" them: a method which requires to be described.

"CAMPS" are shallow pits, filled, and ridged up as a roof, with potatoes; which are covered up with the excavated mould of the pit.

This is a happy mean between burying them in *deep pits*, and laying them upon the *surface*. See YORK. ECON. v. ii. p. 62.

Camps are of various sizes; being too frequently made in a longsquare form, like a corn rick, and of a size proportioned to the quantity to be laid up. It has, however, been found, by experience, that, when the quantity is large, they are liable to heat and spoil:

spoil : much damage having sometimes been sustained by this imprudence.

Experienced campers hold, that a camp should not be more than three feet wide : four feet is, perhaps, as *wide* as it can be made with propriety ; proportioning the *length* to the quantity : or, if this be very large, forming a range of short ones, by the side of each other.

The usual *depth* is a foot.

The bottom of the trench being bedded with dry straw, the potatoes are deposited ; ridging them up, as in measuring them with a bushel. On each side the roof, long wheat straw is laid, neatly and evenly, as thatch ; and over this the mould, raised out of the trench, is evenly spread : making the surface firm and smooth with the back of the spade. A coat of coal ashes is sometimes spread over the mould ; as a still better guard against frost.

It is needless to observe that a camp should have a dry situation ; or that the roots ought to be deposited in as dry a state as possible.

These camps are *tapped* at the end ; some battins, or a quantity of loose straw, being thrust close into the opened end, as a *bung* or safeguard,

MARKETS

MARKETS and EXPENDITURE. Birmingham, the other manufacturing towns, and the collieries are constant markets for this valuable crop. And beside what go to market, great quantities are expended, in a plentiful year, on the fattening of swine; and some few have been given to cattle.

The *price*, in a plentiful year, very low; seldom more than a shilling a bushel: in 1785, they were sold, at the time of taking up, at ten pence: in December, they were sold at a shilling; and warranted to weigh 80lb. a bushel. How cheap, as an article of human food!

PRODUCE. Extraordinary large. By information, that I have no reason to doubt, and in two or three different instances, six hundred bushels an acre have been produced! seven strike a "rood" (of eight yards square) has, not unfrequently, been grown. Four to five strike a rood, or three to four hundred bushels an acre, is reckoned a fair good crop.

For the practice of planting the nooks of corn fields, see MIN. 44.

For an instance of the master and his men going halves in a potatoe crop, 63.

TURNEPS.

## 29.

## T U R N E P S.

THE TURNEP CROP, though cultivated in a good manner by a few superior managers, does not enter into the ordinary practice of *this* district. At present, not one acre in a hundred, taking the district throughout, is subjected to the turnep culture. I have rode through a succession of townships without seeing an acre of turneps; and, of those that are sown, few are cultivated in a husbandly manner.

Nevertheless, there are, here and there, on *this* side of the Tame, a patch of turneps to be seen, set out and cleaned in a husbandlike style.

West of the Tame, where the soil is light, and the subsoil absorbent, the turnep crop forms the basis of the present husbandry: and this notwithstanding the proper management

ment of the crop may be said to be new to this quarter of the kingdom. The hoing of turneps has not been established, as a practice in *husbandry*, more, perhaps, than twenty years. To the MARQUIS TOWNSHEND, who sent hoers out of Norfolk, the country, I understand, is indebted for its establishment.

There may be two reasons why the turnep culture does not become prevalent in this district.

Grass can be had at will ; the whole district being prone to it ; while the foil and the sub-foil, except in some particular situations, are, *perhaps*, ineligible for this crop. One strong evidence, at least, may be produced in corroboration of this idea. One of the largest farmers in the district grows no turneps ; and gives this as a reason for his conduct.

The first year his father gave up the management of his farm to him ; some twelve or fifteen years ago ; he grew a piece of turneps : the first the farm produced. The crop turned out pretty good ; and he began, agreeably to the common practice of the country, to fold them off with sheep. But the piece  
lying

lying flat, and the weather proving wet, his sheep did "faddy;" and what was worse to a young farmer, his father laughed at him. He littered them in the close, with straw; but this would not remedy the evil: at last he drew the turneps; and threw them to the sheep on an adjoining piece; but even then, they did no good upon them. In short, he speaks of eating turneps upon the ground with sheep as a thing impracticable!

I do not mention this circumstance to throw a damp on the culture of turneps; but to endeavour to assign them their proper soil and situation; by showing, in striking colours, the difficulties to which the crop is liable, on strong retentive land.

The other circumstance which has tended to check the cultivation of the turnep crop, was the devastation of the turnep caterpillar in 1782: (See NORF. ECON.) since which time its culture has been declining, rather than gaining ground.

On a light dry turnep soil, in an upland situation, this crop is in a degree *necessary*; and, there, little difficulties are struggled with, and miscarriages soon forgot. Here, on the  
contrary,

soil is in heart ; the crop of barley good, and the surface of course *clean* ; that is, free from the *herbage* of weeds ; this may, sometimes, on a sheep farm, and under particular circumstances, be a valuable expedient. If the attempt miscarry, the seed, only, is lost. The *thought*, at least, is worth preserving ; especially as the instance which came more particularly to my knowledge, occurred in the practice of a judicious manager.

SOWING. The deviation to be noticed is in the *method of sowing* : instead of delivering the seed from between the two fingers and the thumb, as is usually done, the seedman (some seedsmen at least) lets it fall back into the palm of his hand, and delivers it from thence, in the manner corn is sown. It is observable that in this method of sowing, it is necessary to keep the fingers close ; otherwise, the seeds of turneps being small, they are liable to fly out between them. I mention this as a deviation, rather than a superior excellency. I have seen turneps come up very even from this method of sowing ; but not evener, than I have seen them rise in Norfolk, from the common method.

For observations on *hoing*, in this district, see MIN. 6.

EXPENDITURE. The expedient I have seen practised, in this stage of the turnep culture, is that of drawing the turneps, at the setting in of a frost, or to clear the ground in the spring, and loading them upon waggon; leaving them in the piece, where they are safe, and ready to be drawn to whence they may be wanted.

For obs. on the Midland practice of *boing*, see MIN. 6.

For obs. on *handweeding*, 16.

For an instance of *plowing in* turneps as a manure, 34.

For an instance of young turneps *thriving* in drought, 43.

For instances of the *enemies* of turneps, 61.

For an instance of *boing* clusters, 79.

For further obs. on turnep *insects*, 84.

For general obs. on the turnep *culture*, 87.

For practical obs. on *boing*, 87.

For instances of turneps being unfriendly to *barley*, 92.

For obs. on *turneping* in frost, 115.

CABBAGES.



## 30.

## CABBAGES.

THE SOILS of this district are better adapted to CABBAGES, than to *turneps*. Considering the facility of the culture of this crop, and the great produce it yields when a proper sort is planted on a suitable soil, and considering the length of time cabbages have now been cultivated as a crop in husbandry; it is remarkable that they have not entered more freely into the general practice of *this* district; to whose soil and situation they are peculiarly well adapted.

At present, the quantity grown is inconsiderable: I have seen, however, several small patches in different parts of the district; and, from the manner in which the value of these is spoken of, there is some probability of cabbages becoming a prevalent crop.

Among the rambreeders of *Leicestershire*, &c. they may be said to be already established as such; and there is one man within *this* district, Mr. PAGET of Ibstock, who is the greatest cabbage grower I have any where observed \*. He has grown ten, twelve, or fourteen acres, a year, for many years past.

On the CULTIVATION of this crop so much has been said, the public could receive little useful information from a recital of the practice of this district.

Indeed, the art of CULTIVATING cabbages is so extremely simple, and so well understood by every farmer, gardener, and cottager in the kingdom, it, perhaps, of all other operations in husbandry, requires the least explanation.

Much, however, depends on the SPECIES or sort for field culture. Not more on the *size*, than on the *nutritiveness* of quality and *hardiness*, in resisting the severity of winter.

There is, in this country, a valuable sort—a large green cabbage—propagated,  
if

\* Excepting, perhaps, Mr. BAKWELL of Dishley.

if not raised, by Mr. BAKEWELL, who is not more celebrated for his breed of rams, than for his *breed of cabbages*.

Great care is observed, here, in RAISING THE SEED; being careful to suffer no other variety of the brassica tribe to *blow* near seed cabbages; by which means they are kept "true to their kind." To this end, some, it is said, plant them in a piece of wheat: a good method; provided the seed in that situation can be preserved from birds.

The principal advantage of largeness in size of field cabbages is, that of being able to plant them wide enough from each other to admit of their being cleaned with the plow; and yet to afford a full crop.

The PROPER DISTANCE, therefore, depends in some measure on the natural size of the species, and the strength of the soil. The thinner they stand, the larger, no doubt, they will grow; but the closer the more numerous: and I am of opinion that cabbages, as turneps, are frequently set out too thin. Mr. PAGET's distances are four feet by two and a half: a full distance, in my opinion, for large cabbages on a rich soil.

The EXPENDITURE of cabbages, here, is chiefly on *sheep*; but *cattle* and *swine* have a proportion. But, what is extraordinary, I have not in this, or any other district, met with an instance of cabbages being given to *horses*; and yet it is more than probable, that, either alone or mixed with chaf or "cutmeat," they might be rendered a valuable species of horse food.

For ample observations on the culture of this crop, see MINUTES of AGRICULTURE in SURREY; DIGEST, p. 95, and the MINUTES thence referred to.

CULTIVATED

## 31.

## CULTIVATED GRASSES.

THE PERENNIAL LEY is seldom the object of cultivation, in this district, the culture of grasses being confined to TEMPORARY LETS; and chiefly to one species, which may be said to be peculiar to the district; and which, though of long duration, compared with the temporary leys of other districts, cannot be deemed perennial; its continuance being limited to six or seven years: and, in distinction, I shall term it SEXENNIAL LEY: beside which the ANNUAL or CLOVER LEY will require to be noticed.

CLOVER. It appears, by the COURSE OF HUSBANDRY already given, that the practice of growing wheat on a clover ley, agreeably to the modern practice of the kingdom at large, is not prevalent here. Nevertheless, the practice is sometimes used; more espe-

cially in the common fields, where it has been introduced, in several instances, as a substitute of the bean crop.

When wheat is sown on the first year's ley, it is usual to mow the clover twice: under an idea, that a full crop of clover mown twice in the season, smother's weeds of every kind; even couch! It no doubt gives them a great *check*.

It is observable, however, that, in the commonfield practice, by sowing clover every third year, the crop, though abundant for awhile, soon begins to fail: even in so short a time as twelve or fifteen years. See also NORF. ECON. on this circumstance.

This circumstance is not introduced, here, as an evidence against the cultivation of clover; which is evidently, on a noncalcareous soil, by much the most valuable *leaf grass* (if the term were admissible) agriculture is at present acquainted with; but to put those, who have fresh ground in their possession, on their guard in its cultivation.

TURF; or SIX YEARS LEY. In the inclosed townships, this is the prevailing and almost only ley; furnishing, in its different stages, the two grand crops; CLOVER and GRASS.

In

In the ordinary practice of the country, the method of cultivating it is merely that of sowing about ten pounds of RED CLOVER, at the time of sowing the barley.

To the red clover, some judicious managers, in *this* part of the district, add a small quantity of clean RAYGRASS, with a few pounds of WHITE CLOVER.

There are, however, men, and those of the first abilities, on the lighter lands, round the skirts of the Charnwood hills, who, though advocates for raygrass, think white clover unnecessary; finding, that whether they sow any or none, their leys are equally full of it.

When this is the case, it would, indeed, be folly to throw away the seed: but there are few lands that are blest with so desirable a quality as that of affording, naturally, a turf of white clover. By manuring highly, this valuable herb, especially on light free lands, may generally be obtained in sufficient quantity; and it is by those who generally manure their young leys on such land, that white clover is omitted to be sown.

In the MANAGEMENT of YOUNG SEEDS it is observable that, in the common practice of the district, and I understand universally, they  
are

are eaten off with sheep in autumn. This I mention, not as a pattern to be copied implicitly, but as a circumstance in provincial practice. If they be eaten off in dry weather, and not too closely, the effect, it is possible, may not be so prejudicial as is generally conceived.

The first, and sometimes the second year, the young leys are *mown*, as CLOVER : the last four or five, they are *grazed*, as GRASSLAND.

The CLOVER of young leys is seldom mown more than once \* ; but, contrary to the practice of other districts, it is frequently suffered to run up, into head, as if for mowing a second time, before stock be turned upon it!

In

\* A very superior manager of this district pastures, in the spring, his clover leys which are intended to be mown for hay ;—sometimes so late as the beginning of June : and gives a threefold reason in support of his practice. The feedage of clover, in May, is valuable : a full crop of clover is made with difficulty and uncertainty : and the hay of such a crop, he conceives to be less valuable in quality than what he calls half a crop : and, upon his land, his reasoning may be conclusive ; a rich free loam, in high cultivation, recently inclosed, and the clover crop new to it ; the crops of course prodigious.—On a less productive soil, however, and this already exhausted by clover, even half a crop could not be obtained, with any degree of certainty, by that management.



In this state, stock of every kind are admitted; particularly rams, as will hereafter appear: but horses\*, and even cattle, are turned into clover belly-deep! and this without apprehension of danger: it being found, by experience, that it is less dangerous to cattle in this, than in a younger state.

For an instance of drawing the common thistle out of young leys, see art. CORN WEEDS.

For the AFTERMANAGEMENT of these TEMPORARY LEYS, see the next article; they being considered, in practice, after the second year, as analogous with older GRASSLANDS.

\* For an instance of clover in this state being affected by and friendly to horses, see MIN. 17.

GRASSLAND.

## 32.

## GRASSLAND.

THE SPECIES OF GRASSLAND, in the DISTRICT of the STATION, are, chiefly, LOWLAND GRASS, or "MEADOW;" and MIDDLELAND GRASS, or "TURF:" there being no UPLAND GRASS OR SHEEPWALK within it; except some heathlets, toward the Derbyshire margin.

MIDDLELAND GRASS, or "TURF." This includes the principal part of the grasslands of the district. It consists chiefly of the TEMPORARY LEYS mentioned in the last article; with a slight intermixture of OLD GRASSLAND, —provincially "OLD TURF:" namely, lands that have lain, some centuries perhaps, in a state of grass; many of them being now over-run, as such lands too often are in other districts, with anthills and other encumbrances; some of them as full of anthills as a forest, and almost as rough.

In soil and situation, these OLD GRASSLANDS are similar to those of the temporary leys of the arable lands; and their management is the

the same. All, therefore, that requires to be said of them is, that they ought not to remain any longer a disgrace to the husbandry of the district; but ought either to be subjected to the general management of the country, or to be rendered productive, as grassland, by clearing them from their present encumbrances.

The GENERAL MANAGEMENT of this class of grasslands is that of keeping them constantly in the state of PASTURAGE; as grazing or dairy grounds.

In the MINUTIAL MANAGEMENT of PASTURE GROUNDS, a few *particulars* require to be noticed: though taken *all together*, the practice of this district (nor indeed that of any other *individual* district I have yet seen) cannot be held out as a pattern. See the RURAL ECONOMY OF YORKSHIRE; in which the subject of GRASSLAND is treated of analytically, and its several departments explained.

In the *spring management* of *pastures*, a practice prevails, in this neighbourhood, which I have not met with elsewhere.

In grounds which are fed in winter, cattle are induced to fly to the hedges for shelter, and there to drop their dung. And it is the custom, here, to set women to collect the dung,

dung, thus partially and superfluously scattered, into heaps; and to cart it into the middle of the piece, and then spread it upon the parts which most require it: while some individuals pile it in large heaps, to be set about in winter; objecting to the practice of spreading it over the grass in the spring, as tending to foul it: and, under the same idea, object to spreading the dung, dropt in the area of the piece,—late in the spring: esteeming it better management to collect and carry it off, to be set about in a more suitable season.

The whole of this practice, so far as relates to the collecting of dung on pasture lands, more especially *old* pasture lands, may be eligible. But I am of opinion, that dung thus collected, ought not to be set upon *pasture ground*; especially such as, having been long in a state of pasturage, may be in a degree fatiated with this species of manure; but should be carted to the dungyard for the use of the *arable land*, or piled in heaps for the use of *morning grounds*: not, however, to be set on in winter—the worst season possible—but immediately after the hay is off: refreshing the  
pasture

pasture grounds, if they require it, by some *change of manure* \*.

For the *stocking of pastures*, see the article  
GRAZING.

In what may be termed the *winter management of pastures*, this district furnishes an instance of practice, which is well entitled to a place in this register: namely, that of shutting up pasture grounds, in autumn, for a supply of SPRING FEED.

Mr. PAGET of Ibstock, in whose superior management I more particularly observed this admirable stroke of practice, shuts up  
from

\* MOLES. A remarkable circumstance in the present state of agriculture of this district is the scarcity of moles. A mole hill is rarely seen. There are perhaps entire townships without a single mole in them.

Two reasons may be assigned for this circumstance. There are in this district few *old hedgerows*, and still less *woodland*: both of them nurseries of moles. And while they are thus destitute of shelter, it is the practice for townships to join in their destruction.

The price, in a township which has been neglected and the number of moles considerable, is about a penny an acre a year: afterwards not more than a halfpenny an acre: not more than two guineas perhaps for a middlesized township: and this, under due attention, becomes in a few years a mere sinecure: except near woods; where they can seldom be wholly overcome.

from the middle of September to about old Michaelmas, as the age of the grafs, the season, and other circumstances suit; making a point of eating the ground level and bare, previous to its being freed from stock; from which it is kept free, until it be wanted for ewes and lambs; or, if it be intended for cattle, until the first shoot of grafs in the spring; which, mingling with the autumnal shoots, the herbage is found to be more nutritious to stock than either of them are separately. As a *certain* and *wholesome* supply of food for ewes and lambs, in early spring, this PRESERVED PASTURE is depended upon as the sheet-anchor; in preference to turneps, cabbages, or any other species, whatever, of what is termed SPRING FEED.

For observations on PRESERVING AFTER-GRASS, as a supply of spring feed, see YORK. ECON. v. ii. p. 148.

LOWLAND GRASS, or "MEADOW." The meadowlands of this district consist of the banks of rivers, and of the bottoms, or dips of vallies, scattered over almost every part of it.

These meadows are mostly kept as MOWING GROUNDS; and the particulars, belonging to their

their MANAGEMENT, which will require to be noticed, fall under the heads

Draining,  
Watering,  
Hay harvest,  
Aftergrafs.

**DRAINING.** This operation, whether with respect to *underdrains* or *surface drains*, is well attended to, here; better, I think, than in any other district which has fallen under my observation.

*Underdraining* has been already mentioned under the article **SOIL PROCESS**; and all that requires to be said of *surface draining* is, that it is generally done in the proper season:—autumn, or the beginning of winter. See **NORF. ECON.**

For instances of practice in draining meadow lands, see the **MINUTES** referred to below.

**WATERING MEADOWS.** The watering of meadows cannot be said to have yet entered into the common practice of this district. Nevertheless, it has made some considerable progress toward it. Many of the superior class of occupiers have, already, evinced their

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spirit,

spirit, at least, in prosecuting this **CARDINAL IMPROVEMENT**.

There are, indeed, a few instances, in which the art has reached a degree of perfection, equal, perhaps, to that which it has attained in any other part of the island. But as I still hope to see this department of rural affairs on what may be termed its own native soil, the **MORE WESTERN COUNTIES**, where it appears to have been first practised, in this island, and where, only, I believe, it has been received into common practice,—I shall forbear giving a *detail* of it in this place. Nevertheless, there are *circumstances*, in the practice of this district, which require to be noticed.

The **ORIGIN** of meliorating grasslands with water may be traced, pretty evidently, in this district.

The benefit of **NATURAL FLOODS**, to the grasslands they occasionally overflowed, being evident, and in some instances great, the means of producing **ARTIFICIAL FLOODS**, and of spreading them over lands, not liable, in their natural situation, to be overflowed, would become, of course, a desirable object.

The most *obvious* effect of floods, or overflowings of rivers and brooks, on the lands  
over



over which they spread, is that of *depositing their earthy particles*; thereby operating as a **VEHICLE OF MANURE**. It is likewise evident to common observation, that foul waters, as those of floods, let fall their sediment most freely in a *flagnant state*. And it is also equally evident, that the state of stagnation of the waters of floods, or a state that approaches it, is caused by some obstruction of the current, below the place of stagnation.

These circumstances being seen, and they could not well be missed by any one who gave the subject a second thought, the means of manuring lands with water, artificially, were given: in situations, I mean, which would admit of the requisite obstructions.

The dips or vallies which abound, more or less, in every quarter of the kingdom, and which are mentioned above, were most apt subjects for flooding, artificially, with foul waters, on the principle of **MANURING** the land with their **SEDIMENT**.

A bank or dam being made across the valley, below the part to be manured, the rivulet, which always accompanies a valley of this kind, especially after heavy rains, the

only time when flooding on this principle could be practised, would of course be obstructed; and its waters, fouled, perhaps, with the richest particles of arable lands, would be spread over the bottom of the valley, to an extent proportioned to the height of the bank, and its own flatness; a valve or floodgate being fixed in the bed of the rivulet, to let off the waters, when the *whole* of their foulness were deposited: thus gaining a principal advantage over natural flooding; in which the grosser particles, only, are let fall; the finer, and perhaps most valuable, escaping to the river, and thence to the sea, before they be precipitated.

On these principles, it is evident, some of the meadow lands of this district have formerly been flooded \*: and it is not probable that so evident a method of improving meadow lands should have been confined to this district; but may have been common to other parts of the island.

But the **ANTIEN**T METHOD of meliorating grasslands, by the means of **STAGNANT WATER**, could no longer prevail, than until the  
supe-

\* See MIN. 27.

superior effects of RUNNING WATER, on such lands, were discovered and ascertained.

This important discovery must have been made, by *observation*, on the comparative effects of running and standing water, in the natural or artificial flooding above spoken of; and must have been ascertained, by a long course of *experience*: it is not likely that *reason* should have had any share, in striking out the MODERN METHOD of improving grasslands, by RUNNING WATER. For even now, when the reality of the improvement appears to be fully established, there seems to be no satisfactory *theory* to account for it. The *warmth*, communicated by running water to the grass it flows over, is the best account that the most enlightened in the art can give, of the good effect of running water, on grassland.

Even after the discovery was made, and the effect fully established, it would be some length of time, before the art arrived at its present high degree of perfection. It may, in its present state, be safely deemed the most scientific operation that has entered into the common practice of husbandry.

To the memory of the inventor or inventors be the highest praise!

If the art, as it now stands, were struck out ON-PRINCIPLE, it must have been on that of ANIMAL CIRCULATION; to which the operation of meliorating grasslands with water, through the means of FLOATS and DRAINS, is perfectly analogous.

The *floats* are *arteries*, conveying the circulating fluid to every part of the subject; imbuing every atom: the *drains*, *veins*, collecting the scattered fluid, and conveying it back to its natural channel.

In less figurative language, the floats are trenches, receiving, by the means of flood-gates, as occasion requires, the waters of a river, brook, or rivulet, and conveying it along the upper margin, and upon the tops of the natural or artificial swells of the field of improvement: the drains, counter trenches, stretching along the lower margin, and winding in the dips and hollows, to receive the water spread over the surface by the floats.

Each set of trenches, whether of floats or drains, bears more or less resemblance to a tree, with its trunk and branches: the branches of the floats increasing in number, and diminishing in size, as they proceed from the river or other source; those of the drains, on the  
con-

contrary, diminishing in number and increasing in size, as they approach the receptacle.

When the water is at "work" (as it is properly enough termed) the entire surface (supposing the operation to be *perfect*) is covered with one continued SHEET OF LIVING WATER; purling evenly over every part, some inch or more deep. If the grass be very short, the water is seen; and has a beautiful as well as a profitable effect: if not, it steals unseen among the herbage; or shows itself partially: it being impossible, in practice, to render the sheet, throughout, of a uniform depth or thickness.

From this general idea of the method of watering grasslands, on the modern principle, it is evident, that a *dead flat*, a *perfect level*, is, of all other, the worst adapted to the practice.

A perfect level, however, seldom occurs in nature: inequalities, sufficiently to promote a circulation of water on turf, may generally be discovered, if judiciously sought.

In the MIDLAND COUNTIES, I have seen, in the practice of a superior manager, a beau-

tifully simple expedient practised, to find out the inequalities of a piece of ground, nearly flat : that of covering it with water ; and preserving the level by the means of “ level-ling pegs :” stumps or piles driven down, in various parts, to a level with the surface of the water ; so that after the water was let off, the level still remained. The parts last covered were, of course, the proper ground for the floats ; the parts last freed, for the drains : art being used, where wanted, to give additional advantage to the natural inequalities.

Situations, in general, abound sufficiently, with inequalities of surface : natural, as the *swells and hollows* of lands lying out of the way of floods, and having never been plowed : artificial, as those which have been raised by the plow into *ridge and furrow* : in *this* case, the ridges receive the floats, the furrows the drains : in *that*, the level (the spirit level, or perhaps only a plummet) is the guide to the floats ; the water they throw out, to the drains.

In this district, I have seen the *side of a bill* watered with rain water from a road running along the top of it : the same trench, in this case,

case, acting as float and drain; running, a zigzag, along the face of the slope; the lower folds catching the water spread out by the upper.

I have likewise observed, in this district, several instances of *ridges and furrows* being watered from similar sources. In these cases, whether the natural descent of the lands were little or great, the floats were opened upon the ridges, with clods of turf, cut out of the trenches, placed, at distances proportioned to the descent, to check the current sufficiently, to force the water out of the trench above, yet leaving it a sufficient passage, to suffer it to carry down a supply to the parts below.

In this district, also, I have met with one or more instances in which *ridges and furrows* have been *levelled!* at an excessive cost, by paring off the turf, throwing down the ridges by hand, and replacing the turf! giving the surface one regular gentle descent: and this, notwithstanding it is allowed, by those who may be styled masters in the art, that **THE QUICKER THE CIRCULATION, THE MORE BENEFICIAL THE EFFECT.**

Upon the whole, it appears pretty evidently, that the operation, though *scientific*, can seldom be rendered *mechanical*.

Straight

Straight lines and plain surfaces can seldom be had, but at a great and, frequently, an unnecessary expence. The given situation of the ground should be consulted, and maturely studied, before the work be set about. Every site may be said to require a different arrangement of trenches. Of course, no man ought to set about a work of so difficult a nature, until he has studied its principles, and made himself master of its *theory*: nor, then, without the assistance of *practice*, in himself or others.

To expatiate on the UTILITY of watering grasslands would be a waste of words. In situations where a *sufficient supply* of water, of a *fertilizing quality*, can be commanded, *at all seasons*, it ranks, indisputably, among the highest class of improvements.

Much, however, depends on the QUALITY of the water: not on its *colour*, or *clearness*, but on the specific quality of its *suspended particles*. Waters, in their natural state (not purified by distillation), more especially spring waters, though perfectly transparent and pure to the eye, are various in quality, as soils are: owing to earthly and other particles being suspended in them, imperceptibly

to



to the eye; requiring the aid of chemistry to detect them. Hence hard water, soft water, wholesome waters, and medicinal waters. For a striking effect of clear spring water, see MIN. 39.

But although much may depend on the quality of water, for the purpose of meliorating grasslands, still more, perhaps, depends on the QUANTITY; on having a *sufficient supply at all seasons*. With this, there are, perhaps, few waters which might not be rendered beneficial to grassland, if thrown over it at proper seasons, and in proper quantity: without it, the benefit, it is possible, may not be adequate to the expence. The *greatest*, at least the *most obvious*, advantage of watering grasslands arises in a dry season; and if the supply fail in such seasons, as frequently happens, in many situations, the intention is in part frustrated: the early spring waterings being, in this case, all that can be commanded.

This, however, by way of caution: not as a discouragement to the practice. There are, in this island, situations innumerable, in which the advantages arising to the practice, properly conducted, would far exceed  
the

the expence of obtaining them : and to ascertain them is an object of the first magnitude to the owners and occupiers of grasslands.

Thus, having endeavoured to convey a general idea, to those who are unacquainted with the subject, of the nature, the operation, and the effect of watering grasslands, on the principle of circulation, I will mention a few interesting circumstances of practice, which occurred to my observation, in this Midland district.

Mr. BAKEWELL of Dishley stands first, in this quarter of the kingdom, as an improver of grasslands by watering.

Formerly, a suite of meadows, lying by the banks of the Soar, received considerable benefit from the water of the river being judiciously spread over them, in the times of floods. But, now, not only these meadows, but near a hundred acres, I believe, of higher land, lying entirely out of the way of natural floods, are watered on the modern principle.

Mr. Bakewell, like a man of experience in business, before he set about this great work, studied the art in the principal scene of practice;

practice; the west of England; where he spent some days with the ingenious Mr. BOSWELL, who, some years ago, published a treatise on the subject\*.

The great stroke of management, in this department of Mr. Bakewell's practice, which marks his genius in strong characters, is that of diverting to his purpose a rivulet or small brook, whose natural channel skirts the farthest boundary of his farm; falling, with a considerable descent, down a narrow valley; in which its utility, as a source of improvement to land, was confined.

This rivulet is therefore turned, at the highest place that could be commanded, and carried, in the canal manner, round the point of a fwell, which lies between its natural bed and the farmery: by the execution of this admirable thought, not only commanding the skirts of the hill as a site of improvement by watering; but supplying by this ARTIFICIAL BROOK (see YORK. ECON. i. 174.) the house and farm offices with water: —filling

\* MR. BOSWELL'S TREATISE, ON WATERING GRASSLANDS, cannot be too strongly recommended to those who wish to become acquainted with the practice.

—filling from it a drinking pool, for horses and cattle; a wash pool, for sheep; and converting it to a multitude of other purposes\*: acquisitions which many other situations in the island are capable of furnishing.

Mr. B.'s improvements, in this department of rural affairs, are not only extensive, but high; and are rendered the more striking, by "proof pieces" (a good term for experimental patches) left in each site of improvement. Mr. Bakewell is, in truth, a *master* in the art; and Dishley, at present,

\* One of which is too valuable to be passed without distinction. Three years ago, Mr. B. I remember, was endeavouring to invent a flatbottomed boat, or barge, to navigate upon this canal; for the purpose, most particularly, of conveying his turneps from the field to the cattle sheds. But finding this not easily practicable, his great mind struck out, or rather *caught*, the beautifully simple idea of launching the turneps themselves into the water; and letting them float down singly with the current! "We throw them in, and bid them meet us at the Barn End!!!" where he is now (October 1789) contriving a reservoir, or dry dock, for them to sail into: with a grate at the bottom to let out the water; but retaining the turneps; which will there be laid up, clean washed, and freightfree, as a supply in frosty weather!

sent, a *school* in which it might be studied with singular advantage.

Mr. PAGET of Ibstock is also a proficient in the science and art of watering grass-lands, on the modern principle. He cuts a considerable quantity of hay, annually, from lands which have received no other *manure* than *water*, during the last forty years. A striking instance, this, that water is not merely a *stimulus* or *force*, as some men conceive it to be; but communicates some actual *nutriment* to the herbage\*.

Mr. MOOR of Appleby has executed a considerable work of this kind, and in a judicious manner; cutting a fresh channel, on one side of the site of improvement, for a rivulet which winded through its middle; in order to prevent its overflowing at an improper season; and converting the old channel (partially filled up) into a main float: an expedient which may frequently be practised with good effect.

And

\* One circumstance which occurred in Mr. P.'s practice ought to be mentioned, by way of caution. By watering an ORCHARD with the washings of the street and yards of a neighbouring village (a desirable species of water) the fruit trees were greatly injured: and in Mr. B.'s practice, a similar circumstance took place.

And Mr. WILKS of Meefham, among his various and extraordinary exertions of genius and spirit, has not neglected the watering of *grafslands*: a species of rural improvement which he is prosecuting with, perhaps, unexampled ardour.

In *this* neighbourhood, there are two instances of practice, which form a striking contrast: one was done at a great expence, with an uncertain supply of water: the other at a trifling cost, with an abundant supply, at all seasons. But as the comparative effect of these two incidents of practice will appear, under striking circumstances, in the MINUTES, it is unnecessary to say more on the subject, here.

HAYING. The harvesting of *herbage* is among the first concerns of husbandry. The quality, and of course the value, of hay depends, in a great measure, on the state in which it is laid up. *Grain*, though liable to damage, by a long continuance of unfavourable weather, is much less hazardous than *herbage*.

Nevertheless, in many, or most, parts of the kingdom, we find HAYMAKING, notwithstanding it is one of the oldest operations  
in

in husbandry, the least understood, or the most neglected. In this district, it is found in a state of the lowest neglect.

The ordinary practice of the district is this : —the swaths are spread immediately, or presently, after the mowers, with little or no regard to the weather : suffering the grass to lie abroad, no matter how long, until the top be dry. It is then turned ; and, the other side being dried, it is raked into rows ; and carried, as it becomes dry : beginning the rick, perhaps, as soon as one load is ready ; letting it lie abroad, continuing to add load after load, until it be topped up. During the two hay harvests I was in the district, I do not recollect to have seen, in its practice, a HAYCOCK, *of any size or form* ; some bundles of clover hay excepted.

But a main stimulus to good management, emulation, appears to be here wanting, in this case. It is no disgrace to make bad hay. Every thing is attributed to the weather. All the praise of hay-making is given to him who has done first ; and all its disgrace falls on him who finishes last.

In 1784, a difficult season, a first-rate farmer *bragged* of his having made, that year, all

forts of hay ; as cow hay, stirk hay, and “ pig hay :” namely, some so bad as to be fit for litter only.

In 1785, when hay was four or five pounds a ton, I have seen a very industrious pains-taking farmer tedding his hay while it actually rained : giving as a reason for his conduct, that it must be spread about, and it might as well be done sooner as later. Yet I had heard this very man offering, only a few days before, a speculative price of four guineas a ton for “ good” hay, to be delivered the ensuing winter for his own use ! Nevertheless, the hay under notice lay several days abroad, before it was deemed sufficiently dry on the top to be turned !

These circumstances are not mentioned unnecessarily ; but to shew, the last more particularly, which occurred in the practice of one of the shrewdest best managers in his neighbourhood, that the art is not sufficiently understood : though, in the practice of some few individuals, it may be superior to the ordinary practice of the district.

For practice in SURREY, see MIN. of AGRIC.

For the practice of YORKSHIRE, see YORK. ECON.

For



For the practice of GLOUCESTERSHIRE, see GLO. ECON.

AFTERGRASS. The management of after-grass, here, is in general judicious. It is generally suffered to get up to a full bite, before it be broken: not turned in upon, as in GLOUCESTERSHIRE, as soon as the hay is off: nor suffered, as in YORKSHIRE, to stand until much of it be wasted. For further remarks on this subject, see MIN. 62.

In the *stocking* of lattermath, likewise, the Midland graziers are judicious: esteeming it bad management to overstock it. A cow an acre, on well grown aftergrass, seems to be considered as full stock.

REFERENCES to the MINUTES on GRASSLAND.

For observations on the ancient method of *flooding* grassland by "floating upward," see MIN. 27.

For instance of practice in *surface draining*, see MIN. 32.

For the practice of *burning dead grass*, and the dangerous consequences, 38.

For the effect of *calcareous water* on land, see MIN. 39.

For observations on the *water of the Dove*, &c. 42.

For an instance of great profit by *watering*, see MIN. 46.

For the propriety of cutting *surface drains* where fods are wanted, 49.

For experience and the expence in mowing off the *weeds of pasture grounds*, 51.

For lists of *grasses* and *weeds*, and observations on *agricultural botany*, 55.

For observations on *haying in drought*, and on the small *produce of hay* in 1785, 56.

For remarks on eating *lattermath*, 62.

For practice in spreading the mould of *surface drains*, 64.

For practice and expence of clearing *drinking pits*, 66.

For practical observations on *watering ridges*, 68.

For farther observations on spreading the mould of *surface drains*, 69.

For opinion that *geese* are eligible in *pasture grounds*, 72.

For observations on the *meadow softgrass*, see MIN. 73.

For observations on the *creeping crowfoot*, 85.

For instances of *haying* in September, 88.

## LIVESTOCK.

## 33.

## L I V E S T O C K.

A DISTRICT, rich in soil, and much of it in a state of herbage, naturally abounds with LIVESTOCK.

In the MIDLAND DISTRICT, the four principal species are found in peculiar plenty, and in a singular state of improvement. The other three I shall pass over. RABBITS cannot be deemed an object of the rural economy of this district; and with regard to POULTRY and BEES, nothing sufficiently striking has occurred to me in it, to require particular notice\*.

Therefore, this division of the present work will be confined to

Horses,	Sheep,
Cattle,	Swine,

U 3

A country

\* Except that GAME FOWLS are, here, in the first estimation, as a species of POULTRY; as producing more eggs, and being, themselves, better *fleshed* and better flavoured than fowls in general,

A country that has deservedly obtained so much credit by its management of livestock, especially the three species first mentioned, and which has carried on the improvement of the several species, more particularly those of cattle and sheep, with a spirit unknown before, and has raised them to a height unattained, perhaps, in any age or nation, is entitled to every attention. It would, indeed, be unpardonable, and altogether inconsistent with this undertaking, to pass over its practice in a superficial manner. The spirit of improvement is now in the zenith, and the improvement itself, taken in a general light, is now, probably, at its height. The breed of horses of this district is allowed to be on the decline. Its breed of cattle are probably at its height. And its sheep are at present so near perfection, that it is not *probable* they should hereafter receive *much* improvement. Beside, the grand luminary of the art has passed the meridian, and though at present in full splendor, is verging toward the horizon.

It must not, however, be understood, by those who are not locally acquainted with this district, that Mr. BAKEWELL, though he has  
been

been long, and most deservedly, considered as the principal promoter of the ART OF BREEDING, and has for some length of time taken the lead, is the only man of distinguished merit in this department of rural affairs, in the district under survey. It abounds, and has, for many years, abounded, with intelligent and spirited breeders. I could mention some fifteen or twenty men of repute, and most of them men of considerable property, who are in the same department, and several of them eminent for their breeds of stock.

Nevertheless, it must be and is acknowledged, that Mr. BAKEWELL is at the head of the department;—and, whenever he may drop, it is much to be feared, and highly probable, that another leader, of equal spirit, and equal abilities, will not be found to succeed him.

Having said this, however, it will be proper to apprise my readers still farther, that the following account must not be understood as a detail of the practice of Mr. BAKEWELL; but as a more enlarged register of the practice at present established in the MIDLAND COUNTIES. For notwithstanding I have been re-

peatedly favoured with opportunities of making ample observation on Mr. BAKEWELL's practice; and have, as repeatedly, been favoured with his liberal communications on rural subjects; it is not my intention to deal out Mr. B.'s *private* opinions, or even to attempt a recital of his *particular* practice, any other than as it constitutes a valuable part of the practice of the district under survey.

In registering this practice, it will be requisite, beside a separate account of the several BREEDS and their IMPROVEMENT, to describe the methods of BREEDING and REARING each species, and to detail the business of GRAZING, and the DAIRY MANAGEMENT.

To give full scope to the enquiry, it will be necessary to take a separate view of each species of livestock, that are here the objects of attention; and, previously; to convey some general ideas respecting the PRINCIPLES of IMPROVEMENT, which have, here, been laid down, and the MEANS, by which they have been successfully, and rapidly, raised into practice. The subject is new, at least to this work, and will therefore require a degree of attention adequate to its importance.

The

The most general principle is **BEAUTY OF FORM**;—a principle which has been applied in common to the four species. It is observable, however, that this principle was more closely attended to at the outset of improvement (under an idea, in some degree falsely grounded, that **BEAUTY OF FORM** and **UTILITY** are inseparable) than at present, when men who have been long conversant in practice, make a distinction between a “useful sort,” and a sort which is merely “handsome.”

The next principle attended to is a **PROPORTION OF PARTS**, or what may be called **UTILITY OF FORM**, abstractedly considered from the **BEAUTY OF FORM**: thus, of the three edible species, the parts which are deemed **OFFAL**, or which bear an **INFERIOR PRICE** at market, should be small, in proportion to the better parts. This principle, however, appears to have been differently attended to in different species; and will require to be re-examined, in taking the separate view of each species.

A third principle of improvement, which has engaged the attention of the Midland breeders,

breeders, is the texture of the muscular parts—or what is termed *FLESH*: a quality of livestock which, familiar as it may long have been to the *butcher* and the *consumer*, has not, perhaps, been attended to by *breeders*, whatever it may have been by *graziers*, until of late years in this district; where the “*FLESH*” is now spoken of with the same familiarity as the hide or the fleece; and where it is clearly understood, that the grain of the meat depends wholly on the *BREED*, not, as has been heretofore considered, on the *SIZE* of the animal\*.

BUT the principle which, at present, engrosses the greatest share of attention, and which, above all others, is entitled to the *grazier’s* attention, is *FAT*,—or rather *FATTING QUALITY*: that is, a natural propensity to acquire a state of fatness, at an early age, and, when at full keep, in a short space of time: another quality which is found to be hereditary;—

\* It appears, however, in the practice of *YORKSHIRE* (vol. ii. p. 183.), that circumstances led the breeders of that country to pay some attention to the flesh of *cattle*: and I have been informed, by a gentleman conversant in the *HEREFORDSHIRE* breed of cattle, that similar circumstances took place, and probably about the same time, in that quarter of the island.



tary ;—depending, in some considerable degree at least, on BREED, or what is technically termed BLOOD : namely, on the specific quality of the parents.

Thus it appears, that the Midland breeders rest every thing on BREED ; under a conviction, that the *beauty* and *utility of form*, the quality of the *flesh*, and its propensity to *fattiness*, are, in the offspring, the natural consequence of similar qualities in the parents. And, what is extremely interesting, it is evident from observation, that these four qualities are compatible ; being frequently found united, in a remarkable manner, in the same individuals.

Without admitting, or endeavouring to confute, in this place, that the four qualities, here explained, are the only ones necessary to the perfection of the several species of livestock now under review, we pass on to the MEANS, whereby those principles have been applied, in attaining the degree of perfection, at present, observable in the district under survey.

The MEANS OF IMPROVEMENT, in the established practice of the kingdom at large,  
are

are those of selecting females from the native stock of the country, and crossing with males of an alien breed; under an opinion, which has been universally received, that continuing to breed from the same line of parentage tends to *weaken the breed*.

Rooted, however, as this opinion has been, and universally as that practice has prevailed, there is little doubt of the fact, that the superior breeds of stock of this district have been raised by a practice directly contrary;—that of breeding, not from the same *line only*, but the same *family*: a practice which has now been so long established, as to have acquired a technical phrase to express it: “BREEDING IN ANDIN” is as familiar in the conversation of Midland breeders, as crossing is in that of other districts\*. The sire and the daughter, the son and the mother, the brother and the sister, are, in the ordinary practice of superior breeders, now permitted to improve their own kind; and through the assistance of  
this

\* BREEDING IN ANDIN. This term, however, is not, I understand, of Midland origin; claiming *Newmarket* as its birth-place; the idea it represents, being struck out, and the practice in a degree established, by the gentlemen of the turf.

this practice, as will appear, the *bold* leader of these improvements produced his celebrated stock.

The argument held out in its favour is, that there can be only one *best* breed; and if this be *crossed*, it must necessarily be with an *inferior* breed; the necessary consequence of which must be an *adulteration*, not an *improvement*.

How far this novel practice may, in a general light, be considered as superiorly eligible, would be improper to be discussed in *this* place; in which I mean to convey, only, a general idea of the present practice of the district; in order to save repetition, and to enable the reader to follow me through the several parts of the enquiry with greater ease. To this intent, it must likewise be understood, that although much has probably been done by BREEDING IN AND IN, much also has been done by CROSSING; not, however, by a mixture of alien breeds, but by uniting the superior branches of the same breed.

The degree of excellency obtained, however, through these means, is not more remarkable than the rapidity with which the improve-

improvement of the several breeds has been carried on, and extended ; not over this district only, but to various parts of the island.

But these circumstances, likewise, have arisen principally out of a mere point of practice ; which, though not peculiar to this district, is nowhere, I believe, equally prevalent (except in Lincolnshire), and enters not, in any degree, into the practice of the island at large : in which breeders of every class *rear* or *purchase* their MALE STOCK.

Here, on the contrary, breeders mostly HIRE THEM BY THE SEASON,—of a few leading men, in the line of breeding males for this purpose ; returning them, at the end of the season, to their respective owners ; who, during the time of letting, have their shows or exhibitions, to which dairymen, graziers, and stallion men repair, to choose and hire males for the coming season.

Beside these private exhibitions, there are, annually, PUBLIC SHOWS, in different parts of the district, for the same purpose : thus ASHBY has its *stallion show* ; LEICESTER its *show of rams* ; and BOSWORTH has its *show of*

*of bulls*: not, however, merely for letting, but likewise for sale.

The practice of letting male stock, by the season, is a department of rural affairs not known to the kingdom at large; forming a *new* subject in the rural science.

In practice, however, it generally happens that a breeder of male stock—provincially, for want of a better term, called a “TUP-MAN,” is likewise a DAIRYMAN, and frequently a GRAZIER; Mr. BAKEWELL being the only man, in this district, who confines his practice solely to BREEDING and LETTING.

It must not, however, be understood that dairymen and graziers universally, throughout the district, hire their males of these superior breeders. Many of them still go on in the old track of rearing, or of purchasing of each other, agreeably to the practice of other districts.

The practice of LETTING OUT MALE STOCK by the season being a subject new to this undertaking, it will be proper, in this place, to examine it with due attention.

Its ORIGIN does not clearly appear. It has probably arisen in the letting of STALLIONS  
for

for the spring season. A domestic industrious man has a good horse; but is too attentive to the ordinary business of his farm, to follow him every week to three or four markets, and too diffident to set him off to advantage, and to enter into contests and unavoidable squabbles with stallion men: while, to a man of more leisure and less modesty, a loose calling is most agreeable. Thus both parties are served: the letter by receiving a sum certain and his horse again; the hirer by getting a greater number of mares than the owner could have got. This mode of disposal would of course give a loose to the breeding of stallions; for the breeder not only got rid of the disagreeable part of the business; but if his own neighbourhood were overstocked, he could, by this means, send them to other districts. Similar circumstances might lead to the letting of BULLS and RAMS.

Be this as it may, the letting of RAMS has long been the practice of Lincolnshire; and the letting of HORSES has probably been practised, on a small scale, in many districts. But the letting of male stock, viewed in the general light we are now viewing it, was never applied, generally, to the three principal

pal species, until of late years in this district. Mr. BAKEWELL, though he cannot be deemed the projector, has certainly been the principal promoter, of this branch of rural business.

The EFFECT of letting male stock has, probably, been greater than was foreseen. The great improvement which has been made in the stock of this district is striking; but may be accounted for in this practice. A superior male, the best for instance, instead of being kept confined within the pale of his proprietor, or of being beneficial to a few neighbours only, became, through this practice, a treasure to the whole district: this year in one part of it, the next in another. Hence, even one superior male may change considerably the breed of a country. But, in a year or two, his offspring are employed in forwarding the improvement. Such of his sons as prove of a superior quality are let out in a similar way; consequently the *blood*, in a short time, circulates through every part, and every man of spirit partakes of the advantage.

THE METHOD of conducting this department of rural affairs, and the PRICES given, will appear under each species of stock.

## 34.

## H O R S E S.

THE SPECIES of horse bred in this district, is the **BLACK CARTHORSE** ; for which the Midland Counties have, for some length of time, been celebrated. Therefore, notwithstanding a full conviction in my own mind, of the unprofitableness of this breed of horses, as beasts of draft in husbandry, it is necessary to the due execution of this work, and for other reasons which will appear, to register the leading facts belonging to the present improved variety of the Midland Counties.

This variety is generally and well understood to have taken its RISE in six **ZEALAND MARES**, sent over from the Hague by the late **LORD CHESTERFIELD**, during his embassy at that court.

These



These mares finally resting at his lordship's seat at BRETBY, in the Derbyshire quarter of this district, the breed of that quarter became improved, and DERBYSHIRE, for some time, took the lead, in this species of stock.

But, in course of time, LEICESTERSHIRE (into which this improved breed had travelled) either through better fortune, or better management, got the lead,—and kept it: Derbyshire having been, for some years, indebted to Leicestershire, for their best stallions: so much depends on fortune, or management, or both, in breeding.

But although this may be deemed the origin of the present Leicestershire breed, the FORM has been very much altered since its first establishment. During the last thirty years, the long forend, long back, and long thick hairy legs, have been contracting into a short thick carcase, a short but upright forend, and short clean legs: it having been at length discovered, by men of superior penetration, that strength and activity, rather than height and weight, are the more essential properties of farm horses: and there appears to be, at present, some hope of men

in general gaining their senses *so far*, as to see them in the same light.

The *handsomest* horse I have seen of this breed, and perhaps the most *picturesque* horse of this kind ever bred in the island, was a stallion of Mr. Bakewell, named K. He was, in *reality*, the *fancied* war horse of the German painters; who, in the luxuriance of imagination, never perhaps excelled the natural grandeur of this horse. A man of moderate size seemed to shrink behind his forehead, which rose so perfectly upright, his ears stood (as Mr. B. says every horse's ears ought to stand!) perpendicularly over his fore feet. It may be said, with little latitude, that, in grandeur and symmetry of form, viewed as a picturesque object, he exceeded as far the horse which this superior breeder had the honor of showing to his majesty, and which was afterwards shown, publicly, some months ago in London, as that horse does the meanest of the breed. Nor was his form deficient in utility. He died, I think in 1785, at the age of nineteen years.

But the most *useful* horse I have seen of this breed is a much younger horse of Mr. B.  
whole

whose *letter* \* I do not recollect. His carcase thick, his back short and straight, and his legs short and clean : as strong as an ox ; yet active as a poney ; equally suitable for a cart or a lighter carriage :—a species of animal, which, if it were fashionable as human food, would be full as eligible, for a farmer's use, as an ox, of equal strength and activity.

Another comparative advantage of the present improved variety, over the great loose heavy sluggish sorts of this breed, is its *hardiness*: its thriving quality : its being able to carry flesh, or stand hard work, with comparatively little provender.

Among saddle horses, this distinction, in *individuals* at least, is very observable ; and there is no doubt of its belonging to distinct *breeds* of horses ; and may, in much probability, belong to *varieties* ; may be hereditary ; may descend with some degree of certainty from parents to their offspring.

If hardiness of constitution ; if the natural propensity of thriving on a comparatively

X 3

\* Mr. Bakewell has adopted the simple plan of distinguishing not his horses only, but his bulls and rams by *letters*, instead of less elegant *names*.

tively small proportion of food, observable in some individuals, be in its nature, hereditary; be obtainable with any tolerable degree of certainty, by management in breeding; as those who have experience assert it is—not in this only, but in every other species of livestock;—it is a most interesting circumstance in the nature of domestic animals.

**BREEDING.** To gain a comprehensive idea of this subject, it will be proper to examine the male and female separately.

**STALLIONS.** Viewing the district at large, stallions are bred and managed in different ways. Some are bred by *farmers*, who draw them, and cover with them in the season. Others by *breeders*, who either cover with them themselves, or let them out to others for the season, or sell them, altogether, to farmers or stallionmen, who travel them about the country, as in the practice of other districts.

The *letting* is done either at the breeder's private shows, previously to the season of covering; or at a public show, where they are sold as well as let; as will appear in  
MIN. 37.

The

The *prices* given for stallions,—*by purchase*, are fifty to two hundred guineas,—*by the season*, forty to eighty or a hundred, *by the mare*, half a guinea to two guineas. The celebrated horse K. that has been described, covered many years at five guineas, and the horse, mentioned as having been shown in London, is rated at the same price.

The MARES are mostly kept by arable farmers, who work them in their teams, until near their times of foaling; and, moderately, afterward, while they suckle; shutting up the foals during working hours; giving the mares not more, perhaps, than a month's respite from work.

The best *time of foaling* is thought to be March and April: the *time of weaning*, October or November.

DISPOSAL. In the ordinary practice of the country, the breeders of these horses sell them while *yearlings* (provincially “colts”), or perhaps when *foals*: namely, at six or eighteen months old; but most generally the latter.

The *first places of sale*, for *yearlings*\*, are  
X 4 the

\* The *places of sale for foals* are the autumnal fairs of Ashby (de la Zouch) and Loughborough (in Leicester-shire), where they are taken with the dams, previously to their weaning.

the autumnal fairs of Burton (on Trent), Rugby (in Warwickshire), and Ashburn (in Derbyshire), where they are mostly bought up by graziers of Leicestershire, and the other grazing parts of the Midland District; where they are *grown*, among the grazing stock, until the autumn following; when the graziers take them to

The *second places of sale*—Stafford and Rugby; where, at two years and a half old, they are bought up by the arable farmers (or dealers) of Buckinghamshire, Berkshire, Wiltshire, and other western counties; where they are broken into harness, and worked until they be five, or, more generally, six years old; when these farmers, or dealers, who buy them up in the country, take them to

The *third place of sale*—London! where they are finally purchased for drays, carts, waggons, coaches, the army, or any other purpose they turn out to be fit for.

The *prices*, for the last ten years, have been, for foals, five to ten pounds or guineas; for yearlings, ten to fifteen or twenty; for two-yearolds, fifteen to twentyfive or thirty; for 1 x yearolds, twentyfive to forty guineas.

GENERAL

GENERAL OBSERVATIONS. This breed of horses, viewed abstractedly in the light in which they here appear, are evidently a profitable species of livestock \*. The *breeder* has the foals to help to maintain the mares, and to stand, in some degree, against their first cost, their loss of work, and their decline in value after a certain age. The *grazier* is well paid for his year's keep. And the *arable farmer* has not their improvement in price only, but their work, to make up, in some measure, for their extraordinary keep. While the *brewer*, the *carman*, the *carrier*, the *coachman*, and the *army contractor*, are supplied with animals which they want, and which they cannot breed and rear, with the same convenience as the farmer.

Therefore,

\* It must not, however, be understood that all the horses bred in the Midland District, pass thro' the stages, and fetch the prices, abovementioned. The breeder keeps them on, perhaps to the second stage; perhaps to the third; besides what he keeps for his own use and brings to a less profitable market. While some go blind, others lame, and others dying of the various diseases to which this species of animal is liable, are never marketable. What I mean to convey is a general idea of the most prevalent practice of the district.

Therefore, *so far as there is a market* for six-yearold horses of this breed, *so far*, the breed is profitable to agriculture.

But viewing the business of agriculture in general, throughout the island, not one occupier in ten can partake of the profit; and being kept in agriculture, after they have reached that profitable age, they become indisputably one of its heaviest burdens. For, beside a cessation of *improvement* of four or five guineas a year, a *decline* in value of as much, yearly, takes place. Even the brood mares, after they have passed that age, may, unless they are of a very superior quality, be deemed unprofitable to the farmer. Nevertheless, we see the majority of farmers, throughout the kingdom, working even barren mares and geldings down the stage of decline; though they know it will terminate in a ditch or a dog kennel. But, with the same unconcern, some men go to the gallows; though they know inevitable destruction will meet them there.

#### REFERENCES to the MINUTES ON HORSES.

For an instance of their *affecting*, and thriving on, *clover*, see MIN. 17.

For a description of *Ashby stallion show*, 37.

For



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For an instance of horses requiring *water* at grafs, 58.

For instances of the *slaggers* in horses, 70.

For further instances of the *slaggers*, 104.

For still more instances, see MIN. 116.

35.

C A T T L E.

THE BREED of this district is the LONGHORNED : a breed which appears to have occupied, a length of time, the central parts of the island. See GLO. ECON.

In a general view, the old stock of the country, notwithstanding the singular efforts that have been made toward improvement, remains with little alteration. Each division of the district has still its own breed, distinguishable from that of the other divisions. There is a similar distinction between the breeds of Staffordshire and Derbyshire, for instance, as there is between those of Herefordshire

fordshire and Gloucestershire (see *GLO. ECON.*). The breeds of other divisions of the district have characteristics sufficiently strong to show, that the longhorned breed of cattle have, during some length of time, been the prevailing stock of the country; and that, viewing the district at large, Leicestershire excepted, no *radical* change, nor any *obvious* improvement or alteration, has yet taken place. A striking instance, this, of the slow progress with which improvements in this department of rural economy are made, even when carried on with every advantage.

But notwithstanding the old stock may still be said to be in possession of the country, every division of it wears, at present, strong marks of improvement. WARWICKSHIRE, STAFFORDSHIRE, and DERBYSHIRE, may contend for some share of this beneficial change; and in LEICESTERSHIRE, the improved breed may be said to have gained, already, a degree of establishment.

The HISTORY of this extraordinary improvement would be interesting and useful; as it might furnish useful ideas to the improvers of other breeds. All I am able to give is a sketch.

CRAVEN

CRAVEN in YORKSHIRE has long been celebrated for a superior variety of the long-horned breed of cattle. From this source, it is well known, the LANCASHIRE cows have been, and, I believe, still are drawn;—the flower of these celebrated cows originating in CRAVEN HEIFERS.

Formerly, the Craven breed seems to have extended, in a similar way, into WESTMORELAND, also an adjoining county. From Westmoreland, bulls and heifers of this breed found their way into the MIDLAND COUNTIES. The present improved breed is traceable, by the indisputable evidence of many persons still living, to what was here called the “true old Westmoreland sort.”

It

\* The district of WESTMORELAND, from whence these cattle were drawn, is its southernmost extremity; about Kirby-Lonsdale, on the borders of Lancashire, and in the immediate neighbourhood of Craven.

It is an interesting fact, that while this breed has been under the most anxious cultivation, in the Midland Counties, it has been declining in Westmoreland; where it is now, I understand, giving way to the TEESWATER BREED. See YORK. ECON.

How is this to be reconciled? Is the Teeswater breed, for the soil and situation of Westmoreland, evidently superior to the Craven breed? or has the change been wrought, *solely*, by the Craven breed's being debased, in West-

It is generally understood, here, that through this breed, and some fortuitous circumstances, rather than from any fixed principles of improvement, Mr. WEBSTER of Warwickshire (of Canley near Coventry) became, some forty or fifty years ago, possessed of a superior breed of cattle; and continued, during many years, the leading breeder of the Midland Counties \*. I have, indeed, heard it

Westmoreland, through the circumstances of the best of its bulls and heifers being drawn off by the Midland breeders; while the best of those of the Teefwater breed have been brought into it?

This, among other changes of a similar kind, that have taken place in different parts of the island, form an interesting subject of enquiry.

\* Prior to Mr. WEBSTER's day (or rather perhaps to the time Mr. W.'s stock became popular) a superior breed of cattle made its appearance in *this* neighbourhood; at Linton; where one WELBY, a blacksmith and farmer, is said, by those who remember his day, to have been in possession of a very valuable breed of cows; which were said to have been originally from DRAKELOW on the banks of the Trent. Whatever might have been the quality of this breed, it was unfortunately cut off by the distemper; or so far reduced by it as to lose its establishment as a separate breed.

Since this article and the above note were written, I have learnt from the best authority (Mr. PALFREY, a near neighbour and intimate acquaintance of Mr. Webster), that

it said, by a man who has himself been a breeder of some eminence, "that Mr. Webster had the best stock, especially of *beace*, that ever were, or (he believed) ever will be, bred in the kingdom."

To this bold assertion, however, I am not ready to give full credit. I register it merely as an evidence of the high degree of excellency which Mr. Webster acquired. It is *improbable* that, after twenty or thirty years anxious attention, not of *one* man only, but of several, the breed, though excellent then, should not, since, have received some degree of improvement \*.

Be this as it may, Mr. BAKEWELL is well known to have got the lead, as a breeder of cattle, through the means of the CANLEY  
stock.

that Mr. W.'s breed owes its original basis to the same source: having brought with him, from the banks of the Trent, into Warwickshire, when he first settled there, some sixty or seventy years ago, six cows of SIR THOMAS GRESLEY's breed: from which cows, and bulls from Westmoreland and "Lancashire," he raised his celebrated stock.

\* Another eminent breeder, on whose judgement I can better rely, is of opinion, that in beauty or utility of *form* they have received little, if any, improvement since Mr. Webster's day; but thinks that in *flesh*, the more valuable quality, they have been improved.

stock. His celebrated bull **TWOPENNY**, that may be said to have first given the lead to **Mr. B.** was out of a cow, purchased, when a heifer, of **Mr. Webster**, and was got by a bull from **Westmoreland**; a bull purchased in **Westmoreland**.

**Mr. FOWLER** of **Oxfordshire** (of **Roll** right on the borders of **Warwickshire**), whose stock is at present in the first estimation, owes the superiority of his breed to the same source. His cows are of the **Canley** blood; and his bull **SHAKESPEAR**, the best stock-getter, I believe, the **Midland District** ever knew, was got by a grandson of **Twopenny** (out of a daughter of **Twopenny**), and a cow of the **CANLEY** blood.

**Mr. PRINCEP** of **Derbyshire** (of **Croxall** in this district) acknowledges to have raised his present noble herd of cows—the first dairy of longhorned cows in the kingdom, I believe, for form and size taken jointly—from a cow by the name of **BRIGHT**; purchased of the late **Mr. Chadwick** of **Castle Bromwich**: which cow was got by **Mr. Webster's BLOXEDGE** bull, that is spoken of here, as being the purest fountain of the **Canley** blood \*.

The

\* The **BLOXEDGE** bull was out of a threeyearold heifer of **Mr. Webster's** best blood; but was got by a

“**Lanca-**

The PRESENT STATE of the IMPROVED BREED of the MIDLAND COUNTIES, which might be well distinguished by the CANLEY BREED, is the following.

Mr. BAKEWELL is in possession of many valuable individuals, males and females. His bull D. generally known by the name of the "mad bull," is a fine animal; and is a striking proof of the vulgar error, that breeding inandin, *weakens* the breed. He was got by a son of Twopenny, out of a daughter and sister of the same celebrated bull; she being the produce of his own dam. Nevertheless, D. is the sire of Shakespear, by another daughter of the same bull, and is probably the most *robust* individual of the longhorned breed; while D. himself, at the age of twelve or thirteen years, is more active, and higher mettled, than bulls in general are, at three or four years old.

This

"Lancashire" bull, belonging to a neighbour of Mr. Webster. When a yearling, being unpromising, he was sold to a person by the name of BLOXEDGE. But turning out a remarkably good stockgetter, Mr. W. repurchased him; and used him several seasons. He was afterwards sold to Mr. Harrison of Drakenedge (Warwickshire), and Mr. Flavel of Hogshill (in this district), where he died.

This has long been esteemed Mr. Bakewell's best bull; and has been kept, principally, for his own use. He was never let, except part of a season to Mr. Fowler; but has had individual cows brought to him, at five guineas a cow.

Mr. Bakewell's cows are of the finest mould, and the highest quality: and his HEIFERS beautiful as taste could well conceive them: clean and active as does. Mr. B.'s exhibition of cattle would gratify the most indifferent spectator, and could not fail of being highly satisfactory to every lover of the rural science.

Mr. FOWLER's cattle are, at present, in the highest repute. His cows have long been considered as of the first quality:—of the best Canley blood. And his bull SHAKESPEAR, already mentioned, has raised them to a degree of perfection, which, in the opinion of the first judges, the breed of cattle under notice never before attained.

This bull is a striking specimen of what naturalists term ACCIDENTAL VARIETIES. Tho' bred in the manner that has been mentioned, he scarcely inherits a single point of the longhorned breed; his horns excepted.

When



When I saw him in 1784, then six years old, and somewhat below his usual condition, though by no means low in flesh, he was of this description.

His head chap and neck, remarkably fine and clean. His chest extraordinarily deep ; his brisket down to his knees. His chine thin ; and rising above the shoulder points ; leaving a hollow on each side, behind them. His loin, of course, narrow at the chine ; but remarkably wide at the hips ; which protuberate in a singular manner. His quarters long, in reality ; but, in appearance, short ; occasioned by a singular formation of the rump. At first sight, it appears as if the tail, which stands *forward*, had been severed from the vertebræ, by the chop of a cleaver, one of the vertebræ extracted, and the tail forced up to make good the joint : an appearance, which, on examining, is occasioned by some remarkable wreaths of fat, formed round the setting on of the tail : a circumstance, which, in a *picture*, would be deemed a deformity ; but, as a *point*, is in the highest estimation. The roundbones snug ; but the thighs rather full, and remarkably let down. The legs short and their bone fine. The carcase, throughout (the

chine excepted), large—roomy—deep and well spread.

His horns apart, he had every point of a Holdernefs or a Teefwater bull. Could his horns have been changed, he would have paffed, in Yorkfhire, as an ordinary bull of either of thefe breeds. His two ends would have been thought tolerably good ; but his middle very deficient. And I am of opinion, that had he been put to cows of thefe breeds, his flock would have been of a moderate quality. But being put to cows, deficient where he was full (the lower part of the thigh excepted), and full where he was deficient, he has raifed the longhorned breed to a degree of perfection which, without fo extraordinary a prodigy, they never might have reached.

No wonder that a form fo uncommon fhould ftrike the improvers of this breed of flock ; or that a carcafe they had been fo long ftriving in vain to produce, fhould be rated at a high price. His owner, however, happened to be among the firft of his admirers, and could never be induced to part from him, even for a feafon ; except to Mr. PRINCEP ; who had him two feafons, at the  
extra-

extraordinary price of eighty guineas a season. A price at which no other bull has yet been let.

This extraordinary animal is now (1789) eleven years old, and firm in his constitution; but so lame, in his hind quarters, as to render him at present, and during the last season, entirely useless.

His owner, however, has less to regret, as he is in possession of many valuable females of his produce; and of one male, now three years old, by the name of GARRICK\*.

This bull was out of a cow got by a bull of Mr. Bakewell, called the HAMPSHIRE BULL.

Thus, though we find Mr. Fowler, at present, in possession of the lead, he has evidently obtained it through the assistance of Mr. Bakewell's stock. But whether he has gained the ascendancy by accident, merely, or whether he had the better basis to build upon, may be a moot point difficult to determine.

Y 3

Mr.\*

\* Mr. PAGET of Leicestershire (Ibstock in this district) is likewise in possession of a promising young bull of the purest of the Rollright blood; got by Shakespear, out of one of Mr. Fowler's best-bred cows. He is now a yearling; and leaps at five guineas a cow.

Mr. Fowler's cows (about five and twenty in number) are many of them of an extraordinary mould; especially in the fineness of the forend, and the width and fatness of the hind quarters. A daughter and sister of Shakespear, being got on his own dam, is among the first of his herd: another evidence of the good effect of breeding from the same family\*.

Mr. PRINCEP's cows, of his own breed, have been mentioned as being of a very fine quality: nevertheless, his present herd wears evident marks of improvement. Every cow and heifer of the Shakespear blood is distinguishable at sight;—by the extreme fineness of the forend,—the width of the hips,—and the formation of the rump; an

ent-

\* Mr. Fowler conducts his business on the old principle of *selling*, not on the modern way of *letting*, his bulls. Such heifers, too, as his own dairy does not require, he sells, and at high prices. Mr. COKE of Norfolk has had all the cow calves he could spare, during the last three or four years, at, I understand, ten guineas each; taking them while young. Mr. F. has now (October 1789) ten bull calves (all, I believe, by Garrick), for which, *it is said*, he has refused five hundred guineas,

*empresion* which they have received with singular exactness.

Mr. Princep has two valuable bulls, by Shakespear: one of them out of the celebrated BRIGHT.

Beside the three herds that are here particularized, there are many others, in the Midland District, that are entitled to great attention; but which, for various reasons, I think may, with propriety, be omitted in this register. Therefore, what remains to be added to the foregoing account of the present state of the breed, is a GENERAL DESCRIPTION of its higher class of INDIVIDUALS.

The *foreend* long; but light, to a degree of elegance. The neck *thin*; the chap clean; the head fine, but long and tapering\*.

The eye large, bright, and prominent.

The *horns* vary with the sex, &c. Those of bulls are comparatively short—from fifteen inches to two feet:—those of the few oxen that have been reared of this breed are extremely large:—two and a half to three and

Y 4 a half

\* A thick short head, with a snub nose, and a hollow face—provincially a “Dutch head”—is condemned, here, as a most hateful point.

a half feet long :—those of the cows, nearly as long, but much finer; tapering to delicately fine points. Most of them hang downward, by the side of the cheeks, and, if well turned, as many of the cows are, shoot forward at the points\*.

The *shoulders* remarkably thin and fine, as to bone, but thickly covered with flesh; not the smallest protuberance of bone discernible†.

The *girt* small, comparatively with the shorthorned and middlehorned breeds‡.

The

\* Too frequently, however, the double bend does not take place; the horns continuing to shoot downward, until they would reach the ground, or point inward until they would gag the mouth which supports them, were not the points from time to time removed: and, in some individuals, while one horn is pointing to the ground, or winding under the jaw so as to prevent its opening, the other is shooting away from the head, or taking some other awkward direction: thus tending to disfigure, and destroy, the animal which nature ordained them to ornament and defend.

† The Dishley breed, I think, excels in this point: some of the heifers have shoulders fine as race horses,

‡ Nevertheless there are some individuals, more particularly, perhaps, of Mr. Fowler's breed, that are tolerably well let down in the girt.

The *chine* remarkably full, when fat ; but hollow, when low in condition \*.

The *loin* broad, and the *hips* remarkably wide, and protuberant †.

The *quarters* long and level ; the *nache* of a middle width ; with the *tail* set on variously, even in individuals of the highest repute ‡.

The

\* This is considered, by accurate judges, as a criterion of good flesh ; as the large, hard, ligatures, which in some individuals, when low in condition, we see tightly stretched along the chine, from the setting on of the neck to the fore part of the loins, is a mark of the flesh being of a bad quality.

† The protuberance of the *bones* of the hips, is a point at present in the first fashion ; but is always, I observe, mentioned in the language of enthusiasm, not of reason. A wide loin, with the hips protuberating in *fat*, is indisputably a most desirable thing. But what use, or even ornament, two *knobs of bone* can produce, is not to me evident. In some individuals they have to me an *artificial* appearance ; as if the loin were a lid, and the hips handles to remove it. I can admire a *full* hip, and conceive its utility ; but I am clearly of opinion, that there are many points of a bullock better entitled to the breeder's attention, than a *protuberant* one ; yet, it is more than probable, that, in the improvement both of this and the shorthorned breed, points of some consequence have been sacrificed to this idol.

‡ The quarters of Shakespear have been described ; those of the bull D. are not less remarkable : his tail  
appearing

The *roundbones* small; but the *thighs* in general fleshy; tapering however, when in the best form, toward the gambrels.

The *legs* small and clean, but comparatively long \*. The *feet* in general neat, and of the middle size.

The *carcase* as nearly a cylinder as the natural form of this animal will allow. The *ribs* standing out full from the spine; receiving the *entrails* within them. The *belly* of course appears small †.

The

appearing to grow out of the top of his spine, rather than to be a continuation of the vertebræ; the upper part of the tail forming an *arch* which rises some inches above the general level of the back. This, viewing him as a picture, has a good effect; but, as a point, has a very bad one to the grazier; as tending to *hide* the fatness of the rump. It is remarkable, that in this, and many other points, the son and the sire are as dissimilar as if they had no consanguinity.

\* More owing, however, to the gauntness of the carcase, than the positive length of the legs.

† The smallness of the belly is held out as a superior excellency. The viscera being lodged within the ribs is certainly such. But I cannot believe that a paucity of intestines is a valuable property of cattle: intestines are to them what roots are to trees. The ideas of *osal*, and largeness of *bone*, have, *perhaps*, in more points than one, led the improvers away from perfection. This, however, by the way.



The *flesh*, of the superior class I am describing, seldom fails of being of the first quality.

The *hide* of a middle thickness.

The *colour* is various: the brindle, the finchback, and the pye, are common: the *lighter* they are, the better they seem to be in esteem \*.

The *fatting quality* of this improved breed, in a state of maturity, is indisputably good.

As GRAZIER'S STOCK, they undoubtedly rank high.

As DAIRY STOCK, however, their merit is less evident: dairywomen here, and elsewhere, bear witness against them: nevertheless,

\* This colour, however, appears to be merely a matter of fashion. Nevertheless, it strikes me that a *light* colour of cattle is advantageous to the *grazier*.—It is a fact, in the nature of vision, that *white* objects appear to the eye larger, than *black* ones of the same size; and a light-coloured bullock, no doubt, appears larger in a market, than a darker-coloured one, of the same weight.

It may be remarked, in this place, that the six cows which formed the basis of Mr. Webster's breed, were *red*, and it is observable that some of Mr. Fowler's best cows are of that colour.

less, the advocates for the breed assert their eligibility in this character: some, indeed, go so far as to say, that a cow which is profitable to the graziers is so to the dairyman: a position that might be contradicted by a thousand evidences.

Nevertheless, it appears to me probable, that a cow may be so constituted, as to convert her aliment into milk, while milk is continued to be drawn from her, and, when the draught is stopt, *but not till then*, to convert the same current of chyle into fat: a versatility of constitution, however, which, *I believe*, does not belong to the breed under notice; whose propensity to fatness appears to be too great, to permit their lactescent powers to preserve the ascendancy *long enough* for the purposes of the dairyman.

As BEASTS OF DRAFT, the carcase of the longhorned breed, viewed generally, renders them unfit: nevertheless, the carcase of some of the best of the variety under notice, is sufficiently powerful for the purpose of draft; while their natural activity, and cleanliness of limbs, are very favourable to this purpose.

But

But the enormous size of the horns, of the oxen of this variety, would invalidate all their qualifications, were they greater than they really are. If they happen to take a convenient form, they may be dispensed with; but standing out awkwardly, as they frequently do, they become an insuperable objection.

A method of preventing their growth, or even of checking their exuberance, would be a most valuable discovery; to those, especially, who are in possession of the breed, and wish to make them useful as beasts of draft.

From this description of the improved breed of cattle of the Midland Counties, it appears very evidently, that the PRINCIPLES OF IMPROVEMENT, laid down foregoing, have, to this species of livestock, been judiciously applied. The UTILITY OF FORM has been strictly attended to: the bone and other offal small; and the foreend light; while the chine, the loin, the rump, and the ribs are heavily loaded; and with flesh of the finest quality.

BREEDING.

**BREEDING.** The males and females require to be treated of separately.

**BULLS.** Viewing the district at large, its economy, with regard to bulls, is the same as that of other places. Dairymen, in general, use their own bulls, generally of their own rearing; and smaller cowkeepers employ those of their neighbours. But dairymen who pay a closer attention to their stock, purchase their bulls, or hire them by the season, of bullbreeders; who rear, perhaps, five to ten bulls yearly; the superior breeders, for letting; the inferior, for sale.

The practice of *letting* this species of male stock, probably, originated in this district; and in the practice of Mr. Bakewell; about twentyfive years ago.

In the spring, previously to the season of business, the breeders have their private *shows*; and beside these, as has been intimated aforegoing, there are public shows; more, however, for the purpose of sale, than of letting.

The *prices* given for bulls, *by purchase*, run from five to a hundred pounds; *by the season*, from ten to fifty or sixty; *by the cow*, from half a crown to five guineas.

The

The let bulls are *sent out* in April or beginning of May; being generally led in halters; or driven singly; and are *returned* at the end of the season—generally in August, in the same manner.

With respect to the *age* at which bulls “do business,” as it is technically termed here—the practice of this district differs from that of most others; where from two to four years old, namely three seasons, is the ordinary period of employment. But, here, they are pretty commonly allowed to leap while yearlings; and, if good stockgetters, are kept on so long as they will do business; perhaps till they are ten or twelve years old. If they grow vicious, they are kept wholly in the house; if they throw gates or break pasture, they are humbled by a “bull chain,” fastened ingeniously to the nostrils.

It is observable, in this place, that the bulls of this improved breed are not unfrequently, even while youthful, deficient in vigour:—the hired bulls being sometimes returned prematurely on this account.

This might be laid hold of as an argument against the practice of breeding inandin. It is, however, more probably owing to a different cause.

A hand-

A handsome bull,—a bull nearly perfect in all his points,—is most difficult to breed : yet the breeder's object is to render him, to the eye at least, as near perfection as may be. He is, therefore, made up for the show, by high keep ; as well to evince his propensity to fatness, as to hide his defects ; thereby showing him off to the best advantage : the consequence of which is, being taken from this high keep, and lowered, at once, to a common cow pasture, he flags.

Hence, it is become a practice of judicious breeders, when their bulls are let early enough, to lower them down, by degrees, to ordinary keep, previous to the season of employment.

BREEDING COWS. There is only *one* instance, I believe, of cows being kept solely for the purpose of *breeding* : the *dairy* being here, as every where else, a joint intention.

Such as are not employed in the rearing of calves, ought certainly, in common good management, to be made to pay for their maintenance by *milking* or *working* : the last a use to which Mr. Bakewell alone, perhaps, has put them.

One.

One circumstance in the management of breeding cows, practised by leading breeders at least, is noticeable. In the practice of less spirited and less judicious breeders, a cow or heifer, if she happen to miss the bull, is proscribed, let her form and blood be what they may; and, as soon as her milk is obtained, is condemned, even for the first offence.

This, when dairying alone is the object of cowkeeping, is undoubtedly judicious; but, when breeding is a principal or even a joint object, as it is in the practice of most dairymen, such a conduct may be highly blameable. For though it may be easier to breed handsome good cows, than bulls of that description; yet, when we consider how much of the success of breeding depends on the female, it is evidently a want of common policy, to cut off a valuable cow, for one miscarriage.

If she do not breed this season, let her maintain herself by working, until the next. Mares are kept, year after year, without breeding. And if mares are found nearly equal to geldings, in work; why should not cows be nearly equal to oxen, in the same intention?

**REARING CATTLE.** The rearing of cattle is here confined to **BULLS** and **HEIFERS**, for breeding and the dairy : there is not, in ordinary practice, a **STEER** reared in the district ; excepting some few of late years, for the purpose of draft.

The **METHOD** of rearing, here, differs little from that of other districts ; except in the rearing of **BULL CALVES**, and sometimes high-bred heifers, by suffering them to remain at the teat, until they be six, nine, or perhaps twelve months old ; letting them run, either with their dams ; or, more frequently, especially where the dairy is an object, with less valuable cows or heifers, bought in for the purpose ; and, when the intention is fulfilled, sold, or fatted : each cow being generally allowed one male calf, or two females.

The effect of this practice is a quick growth ; and, perhaps, like rearing vegetables in a rich soil, the practice may assist in meliorating the constitution, and enlarging the frame. Be this as it may, the growth of calves, reared in this way, is strikingly rapid.

The best method of the dairymen is this :  
—The calves suck a week or a fortnight, *according*



*ording to their strength* (a good rule): new milk in the pail, a few meals:—next, new milk and skim milk mixt, a few meals more: then, skim milk alone; or porridge, made with milk, water, ground oats, &c. and sometimes oilcake,—until cheesemaking commence: after which, whey porridge, or sweet-whey, in the field; being careful to house them, in the night; until warm weather be confirmed.

Turneps are not thought of as a food of calves; nor, in the ordinary practice of the district, is either corn, cake, or linseed in use; milk, whey, hay, and grafs, being the sole food of rearing calves\*.

The *time of rearing* extends, in this district, through the winter months; but is confined, in a great degree, between the beginning of December and the latter end of March.

In the treatment of YOUNG STOCK, I find little in the practice of this district, that requires particular notice.

The bulls, in the common practice of dairymen, are suffered to ride while yearlings;

Z 2

namely,

\* Until autumn, when turneps are usually given.

namely, at fifteen to eighteen months old; and the heifers to take them, while two years old; bringing them into the dairy at three years old: generally keeping them from the bull until late in the summer,—as the latter end of July, or the beginning of August;—it being a pretty general opinion, that heifers should come in at grass: beside, by this practice, one bull serves both the dairy cows and the heifers. I have known a dairy of twenty or thirty cows, and ten or twelve heifers, served by a “calf;”—a yearling bull.

In the practice of superior breeders, heifers are sometimes kept from the bull until they be three years old; bringing them in at four: especially in that of their enterprizing leader; in whose superior practice, maiden heifers, as well as dry and barren cows, are occasionally enured to harness: a laudable example, that might be profitably followed by every other breeder of cattle.

**DAIRY COWS.** Under this head, I shall consider cows, abstractedly, as they relate to the DAIRY.

*In the CHOICE OF COWS, dairy farmers are guided by criterions different from those which*

which have been enumerated as the favourite points of *graziers* and *modern breeders*.

The DERBYSHIRE cow remains the favorite of the old "dairiers." They argue, that the grazier and the dairyman, distinctly considered, require different animals, to suit their respective purposes. The dairier's object is *milk*; the grazier's *beef*; and it is a trite remark, among dairymen in different districts, that a cow which "runs to beef" is unprofitable to the dairy: for notwithstanding the excellency of her bag, and the plentifulness of her milk, presently after calving, her natural inclination to *fleshiness* draws off her *milk*; while a cow that is by breed, or natural constitution, prone to *milk*, will supply this, at the expence of her *carcase*, let her pasture be ever so plentiful.

These popular opinions, however, though they contain much truth, are not altogether well founded. They hinge on a false principle. Cows are useful, and in a great degree necessary, in a twofold capacity: as dairy-cows, and as grazing stock: the dairyman and the grazier *cannot* have distinct animals: one and the same individual *must* serve both their purposes. And a breed of cows fit for

the grazier only, is, in a general light, not less eligible, than a breed which is fit only for the dairyman.

The Derbyshire cows are unprofitable as grazing stock. They have neither beauty nor utility of form; being loaded with offal of every kind. The head thick, the chap and neck foul; the bone proportionably large, the hide heavy, and the hair long: even the bag is not unfrequently so overgrown, as to be almost hid in hair; a point of milking cows to which dairymen, of most districts, have an objection: this however only serves to show that popular criterions are seldom to be depended upon. Were the flesh and fattening quality of the Derbyshire cows equal to their quality as dairy cows, the hairiness of their bags might well be dispensed with.

The STAFFORDSHIRE cows bear a different characteristic. Taking them together, they are rather adapted to grazing, than the dairy; most of them being tolerably clean. But, in general, they are too gaunt in their carcases to be eligible, either as dairy or grazing stock.

Nevertheless, there are individuals of this breed; or rather, perhaps, of a breed between this and the Derbyshire; that may be said to be

be at once eligible as dairy cows and grazing stock. At least, they come nearer my idea of what a cow ought to be, than any other breed or variety of the *longhorned* breed, I have yet had an opportunity of observing.

Whether the individuals, now under notice, have or have not been produced by a mixture of the Staffordshire and Derbyshire blood, they are the most prevalent on the banks of the Trent, which divides the two counties : it is, indeed, the breed which is there found, more particularly on the Derbyshire side, from Walton towards Stanton, which falls under this description.

The following are accurate dimensions of a middleaged cow of this kind ; somewhat low in flesh, and young in calf.

Height at the withers, four feet two inches and a quarter.

———— of the brisket, nineteen inches.

Smallest girt, six feet, five inches,

Largest girt, seven feet eight inches and a half.

Length from forehead to nache, seven feet three inches.

———— from shoulder-knob to the center of the hip, three feet eight inches.

———— from the center of the hip to the out of the nache, twentyone inches.

Z 4

Width

Width at the shoulders, twenty inches.

—— at the hips, twentytwo inches.

—— the nache, thirteen inches.

Length of the horns, twentyfour inches; their width from point to point, three feet four inches.

The forend fine, long, and standing low.

The head small, and the neck thin, but deep, according with the depth of her bosom,

The shoulders fine; the ribs full; and the loin broad.

The thighs remarkably thin below, as if to give room to her bag, large, clean, and bladder-like; with long teats, and remarkably large elastic milk veins; furnishing an ample supply of milk.

The legs short, with the bone fine ( $7\frac{1}{2}$  inches girt).

The flesh good, and the hide of a middle thickness.

The colour a "brinded mottle," with a "finch back," and white legs.

In temper remarkably cadish, "gentle;" a quality of considerable value, in a cow intended for the pail.

The principal distinction observable, between the form of what is here spoken of as a *dairy* cow, and that of a cow of the modern

dern breed, or what is more generally understood by a "good grazier's cow," is, the former is more roomy and better let down in the chest; the latter, better topped; fuller on the chine and loin; and, generally, fuller in the thigh. Both of them are clean in the forend, and shoulder; the bone in both is fine; the flesh of both good (but that of the modern breed indisputably better); and their hides of a middle thickness.

But the most material difference, and that which determines the *dairyman* in his choice, is, the one loses her milk a few months after calving; the other, if required, will milk the year round.

THE PLACES OF PURCHASE of dairy cows are the fairs of the district, and, during the spring months, a weekly market at Derby; to which cows, fresh in milk, are brought, chiefly by drovers, and mostly *without their calves*.

At the fairs, and in the ordinary practice of this district, cows are almost invariably sold as *incalvers*; frequently at the point of calving; sometimes dropping their calves by the road. I recollect few if any instances of seeing cows at market, with *calves at their feet*; agreeably

ably to the ordinary practice of most other districts.

The *price* of an incalver of the description last recited, has been, on a par of the last ten years, about ten pounds, or guineas.

The MANAGEMENT of DAIRY COWS. In their *summer* management, I have met with nothing of superior excellence in this district. They are turned to grass, about Mayday ; allowing from an acre and half to two acres to a cow : kept generally in one and the same pasture, until aftergrafs be ready to receive them ; and have turneps thrown to them (by those who grow turneps) on grassland, in autumn.

In this district, however, one instance of practice occurred to me which requires to be registered ; namely, that of a dairy of fourteen or fifteen cows being principally *dried off together*, on one day (the middle of December) ; preserving two or three, only, in milk, for the family, during the winter months ; keeping these at hay ; putting the dried cows to straw ; for which purpose, only, they were dried off in this remarkable manner.



It is observable, however, that this practice can be eligible only, when "cows come well in together:" to effect which they are "bulled as fast," that is to say as near together, "as possible."

Unnatural as this expedient will no doubt be deemed by many, it may, nevertheless, in some cases, be eligible: all I shall say farther of it is, that had I not observed it in the practice of one of the oldest and best managers in the district, I should not have registered it\*.

In the *winter* management of dairy cows, one circumstance may be noticed: that of their being frequently kept (in conformity to a modern practice adopted by some leading men) in sheds, which have been described under the head BUILDINGS, continually throughout winter, from the time of their being taken up in autumn, to that of their being turned to graze in the spring, generally four months,—*without any exercise!*

Some discerning individuals, however, have already discovered the inconveniencies of this practice, especially that of their hoofs  
cracking,

\* Mr. LAKING, of Hall End, Warwickshire.

cracking, let them loose in a yard, a few hours every day, to moisten their feet, as well as to exercise their legs, and clean their coats.

THE DISPOSAL OF COWS. In what might be called the natural practice of the district, dairy farmers not only *rear* but *fat* their own cows. One of the largest farmers in the district told me that "he never bought a cow in his life!" he rears fifteen, eighteen, or twenty calves yearly, and fats his own stock; or, for want of room, sells them to graziers.

This forms a beautifully simple plan of management; well adapted to a middlesoil farm; and especially eligible for gentlemen, and others, who are deficient in judgement, and unacquainted with markets. The proportion of grass and arable being determined upon, and the quantity of stock ascertained, the machine is regulated, and nothing but a due attention to the number of heifers, annually reared, is wanted to keep it in continual and uniform motion. A certain number of dairy cows, with a lot of fattening cattle, and another of young stock to follow them, in summer, and to eat straw, in winter. No going to market, but with corn, dairy produce,

duce, and cullen cows. A plan of general management, beautiful in theory; and, if one may judge from the comfortable independency which the person above alluded to is possessed of, through a perseverance, by his father and himself, in this course of management, it is eligible in practice.

**DAIRY MANAGEMENT.** WARWICKSHIRE, almost throughout, comes under the description of a dairy country; and, in the DISTRICT of the STATION, the dairy forms a considerable branch of the business of almost every farm. The outlines of practice are, therefore, requisite to be traced.

The SIZES of dairies, here, are seldom large: fifty cows form the largest in the district: thirty are considered as a large-sized dairy: twenty a middling size.

In taking a view of the dairy of this district, it will be necessary to separate the three principal branches:

Calves;

Butter;

Cheese.

**FATTING CALVES.** The male calves, except such as are reared for breeding, are,

as, has been intimated, almost invariably fattened.

Calves are, here, fattened at the *teat*; and, in the early part of the season, are kept to a good age. But cheesemaking once begun, they are butchered as they drop: at not more, perhaps, than three or four days old; nor at more, perhaps, than three or four shillings price. The market, the manufacturing towns, and the collieries, of Staffordshire.

The only circumstance relative to the *management of fattening calves*, which requires notice, is an expedient used by some individuals, but not, I believe, in universal practice; to make them lie quiet; more especially during a temporary scarcity of milk; which will sometimes take place. In this case, balls, made of wheat flour, and a sufficient quantity of gin to form it into a paste, are given them; three balls, about the size of walnuts, being given about a quarter of an hour after each meal. The effect is, that instead of wasting themselves by incessant "bawling," they lie quiet; sleeping a principal part of their time. By a little custom, the calves get fond of these PASTE BALLS; eating them freely

freely out of the hand ; a proof of their being acceptable to their stomachs. As an *expedient*, they are evidently eligible ; and may be of service to a restless calf ; even when milk is plentiful. This, however, by way of intimation.

**BUTTER.** The only idea which I met with respecting *milk* butter, and which is entitled to a place, here, is that of doing away the *rancidness* of *turnep* butter, and the *bitterness* of *barley straw* butter, by a most simple and very *rational* means. Instead of putting the cream, immediately as it is skimmed off the milk, into the jar or other retaining vessel, it is first poured upon *hot water*, and, having stood till cool, is skimmed off the water ! a new idea : but, I will venture to repeat, a most rational one ; though I have not myself had an opportunity of proving it.

In the same dairy in which the above expedient is used, a method of improving the quality of *whey* butter is practised. This improvement is effected by *scalding* each meal of cream, as it is taken off the whey ; by hanging it over the fire until “ *scalding hot* ;” being careful not to let it boil. This too, I register as a simple and rational process,

cess, and not as one whose efficacy I have proved by my own experience. I register them, however, on an authority which I have no reason to doubt.

**CHEESE.** This is the grand object of the Midland dairy. Very considerable quantities are annually made; particularly, as has been observed, in Warwickshire, and in this neighbourhood,—where cheese of a very fine quality is not unfrequently produced.

It will, therefore, be proper to take a general view of the subject: for although, after the recital of the practices of Gloucestershire and Wiltshire, much important information cannot be expected; yet it is more than probable, some interesting circumstances will arise.

The particulars which, in this case, require to be noticed, are

Soil,	Rennet,
Herbage,	Running,
Managers,	Curd,
Species of cheese,	Cheese,
Time of making,	Markets,
Quality of milk,	Produce.
Colouring,	

Soil.

SOIL. For an account of the soils of the best dairy parts of *this* district, see MIN. 55, in which it appears that a *cool* soil is favourable to cheese.

Nevertheless, I received an idea, here, from a most experienced and intelligent manager, that a very cold “weak” soil is improper for the dairy: that is to say, a soil may be *too cool* for the purpose. The cheese it affords, though good in quality, is found deficient in quantity. His own farm being principally of that description of land, he has, during the latter part of his life, made *rearing* his principal object; considering his *dairy* merely as being subordinate to that end.

HERBAGE. An account of the herbage of the cheese farms of this district will likewise appear in MIN. 55.

What remains to be registered, here, is the circumstance of cheese being, not unfrequently, made from *new leys*; even of the first or second year; while they consist chiefly of *red clover*, with, perhaps, a mixture of *raygrasses*; yet, from these cultivated grasses, provided *trefoil* make no part of them, good

cheese is made. A fact which dairy farmers, in some districts, would not readily credit.

MANAGERS. A striking instance of the folly of dairymen being inattentive to the business of cheesemaking occurs in this district; where a dairy farmer declares, that, one year, he lost forty pounds, by the mismanagement of his dairywoman. This led him to an investigation of the business, himself, and this to a sufficient degree of superintendence, to prevent, in future, a similar loss. See GLO. ECON. on this subject.

SPECIES OF CHEESE. The only "*factor's cheese*," made in this district, is *thin cheese of new milk*. The size, that of single Gloucestershire, or somewhat thicker\*.

For

\* The CHEESE VATS of this district are merely "hoops" of ash, with a bearden bottom. I do not recollect to have seen one instance of "turned vats" being in use. The diameter about fifteen inches, The depth two inches, more or less.

The "FILLET" of this district is of wood: a long shaving or splint of ash; an inch or more wide, and an eighth of an inch or more thick; not formed into a hoop, but left open, with the ends tapering thin, and overlapping several inches. The part of the cheese which rises above the vat being gathered

up



For "*family cheese*," more or less *skim milk* is used ; and sometimes, I understand, *all skim milk*. But *this* not being conformable to the prevailing custom of the country, the practice is looked upon as *fordid*, and waste becomes the necessary consequence.

LEICESTERSHIRE is, at present, celebrated for its "*cream cheese*,"—known by the name of STILTON CHEESE.

This species of cheese may be said to be a modern produce of the Midland District. Mrs. Paulet of Wimondham, in the Melton quarter of Leicestershire, the first maker of Stilton cheese, is still living.

Mrs. P. being a relation, or an acquaintance, of the well known Cooper Thornhill, who formerly kept the Bell at Stilton (in Huntingdonshire, on the great north road from London to Edinburgh) furnished his house with cream cheese ; which, being of

A a 2 a fin-

up and pinched in this fillet, its lower edge is entered within the vat, and, a broad cheese board being put upon it, sinks down with the upper part of the cheese into the vat.

1789. *Tin fillets* are now become prevalent: an admirable improvement. Some care, however, is requisite, it seems, to prevent their rusting.

a singularly fine quality, was coveted by his customers; and, through the assistance of Mrs. P. his customers were gratified, at the expence of half a crown a pound, with cream cheese of a superior quality; but of what country was not publicly known: hence it obtained, of course, the name of Stilton cheese.

At length, however, the place of produce was discovered, and the art of producing it learnt, by other dairywomen of the neighbourhood. Dalby first took the lead; but it is now made in almost every village, in that quarter of Leicestershire, as well as in the neighbouring villages of Rutlandshire. Many tons are made every year: Dalby is said to pay its rent with this produce, only.

Thus, from a mere circumstance, the produce of an extent of country is changed; and, in this case, very profitably.

The sale is no longer confined to Stilton; every innkeeper, within fifteen or twenty miles of the district of manufacture, is a dealer in Stilton cheese. The price, at present, tenpence a pound, to the maker; and a shilling

to

to the consumer ; who takes it at the maker's weight.

Cream cheese being an article of luxury merely, and a species of produce which cannot become of general utility to agriculture, the art of making it does not come within the plan of this work ; I therefore proceed to the manufacturing of milk cheese, agreeably to the practice of the district of the station.

**TIME OF MAKING.** Where the family is large, it is customary to begin as soon as the cows afford milk enough for a cheese ; continuing to make " family cheese," until the cows go out to grass. From the beginning of May to the beginning of August, is the time of making what is termed " year's cheese : " continuing from that time, to the latter end of October, to make what is called the " latter weigh ; " likewise for the factor : and from that time, until the cows go off their milk, make " family cheese."

**QUALITY OF THE MILK.** It is not so customary, here, as in the other cheese countries, to skim a part of the milk from which factor's cheese is made : nevertheless, in some dairies

it is practised ; the proportion skimmed varying in different dairies.

**COLOURING.** In the ordinary practice of the district, cheese is *not* coloured. Nevertheless, some few individuals use colouring ; and find their advantage in doing it. The produce of one passes, at market, for WARWICKSHIRE, that of the other for GLOCEstershire cheese : the factors of course will give more for the latter than the former. To the *consumers*, therefore, this filthy practice owes its prevalency.

**CORRECTING.** In this district, an instance is mentioned in which a large lump of *alum* being kept in the cowl, during the time of coagulation, was *believed* to be efficacious in preventing the cheese from heaving. This, however, by way of hint.

**RENNET.** No established mode of preparation.

**RUNNING.** The ordinary *heat of the milk* 85° to 90°. The *time in coagulating*, held out as proper, is about an hour ; but, in practice, I have seldom or ever found so slow a coagulation.

In a considerable dairy, where tolerable cheese was made, the practice was to *bring* the curd in about a quarter of an hour ! but  
not

not to *break it up* in less than three quarters ! I mention this to shew how many different ways there are of producing cheese of a moderate quality.

Curd. In some large dairies, more particularly, perhaps, under the practice last mentioned, the *breaking* is done, not with a knife or the hand, but with the "churn dash!" an admirable thought, so far as expedition is thereby promoted. But, in a cowl of delicate curd, this coarse tool would no doubt be improper.

The *gathering* is done, in the usual manner, with the hands and the dish, the whey poured off thro' a sieve, and the curd rebroken.

*Scalding.* In the present established practice, the *curd* is not scalded; except in the practice of a few individuals; but generally the *cheese*. It is observable, however, and to me is very interesting, that the finest dairy of cheeses I saw in this district, was *not scalded*, either in the *curd*, or in the *cheese*.

CHEESE, *in the press*. Having been vatted hard with the *bands* (or in some few instances, previously squeezed in the *press*), and having stood about an hour, it is taken out of the press and *scalded*; by immersing it in water,

A a 4

heated

heated to about  $150^{\circ}$ , letting the evening's cheefes remain in the scalding liquor all night; and the morning's cheefes, until the water be cold; when they are placed again in the prefs; in which having remained a few hours, they are (in common practice) taken out; the cloth finally taken off; the cheefslings *salted*; replaced in the prefs; and, having stood another meal (in the whole two meals) are finally taken out of the prefs.

*On the shelves.* Cheefes, here, remain only a few days, with no peculiarity of treatment.

*On the floor,* the year's cheefe, or first weigh, is seldom or ever cleaned. The edges of the latter weigh are sometimes scraped; and sometimes only rubbed with a HAIR CLOTH; an admirable utensil in a cheefe chamber.

MARKETS FOR CHEESE. *London, the manufacturing towns, and the north of England,* to which great quantities of cheefe are sent from this district.

PRODUCE. I met with a well authenticated instance, in this district, of the produce of cheefe being materially influenced by the *season*.

One year twentyone cows produced four tons of factor's cheefe, beside the expenditure  
of

of the family ; together, upwards of four hundredweight a cow ; yet, next year, the same cows, with the addition of four or five more to the dairy, did not produce so much cheese.

The first summer was warm and moderately wet ; neither too wet nor too dry ; a happy mixture of warmth and moisture ; the pastures were eaten level, even to a degree of bareness, yet they always wore a freshness, and the cows, throughout the summer, looked sleek and healthy. The next was a wet summer.

The medium *produce of a cow* is three hundredweight, and upward.

The *produce of the district* would be difficult to ascertain ; as it has not, with respect to the dairy, any determinate bounds. WARWICKSHIRE, and the DISTRICT of the STATION send a quantity of cheese to market, nearly equal, perhaps, to NORTHWILTSHIRE and the VALES of GLOCESTERSHIRE.

GRAZING. The Midland District, viewed collectively, is a GRAZING COUNTRY. South and East LEICESTERSHIRE, and much of NORTHAMPTONSHIRE, fall entirely under this description. WARWICKSHIRE, as has been said, inclines more to the dairy.

The

The DISTRICT of the STATION contains a mixture of the two. There is one man, in this neighbourhood, fats not less than two hundred head annually. Most large farmers, beside the cullings of their own dairies, purchase solely for the purpose of "feeding:"—several of them grazing fifty head.

The SPECIES of grazing, which is here practised, is, in a manner solely, SUMMER FATTING ON GRASS. Some may, every year, be finished with HAY and KEPT PASTURE; and a few individuals practise STALLFATTING, ON HAY and what is called "CUT MEAT;" namely, oats in straw, cut in a chaff machine; and some, but very few, on OILCAKE \*.

The

\* FATTING CATTLE ON GRAINS. At Burton, in this district, several hundred head of cattle, mostly cows, are annually fatted with HAY and GRAINS; the produce of the breweries of BURTON ALE; which being brewed of singular strength, and, in the ordinary practice, little small-beer being made after it, the grains are of a very superior quality. They are mostly used fresh from the vats—sometimes warm—but never hot. When a redundancy happens, the overflowings are laid up in casks and bins, covered up with mould. With these stale grains malt dust is generally mixed. The usual quantity of fresh grains, a bushel a day; with about half a hundredweight of hay a week. From five to six months

is



The practice of SUMMER GRAZING is, alone, entitled to particular notice : and this requires to be registered in detail.

The SITUATION and SOIL have been described, as forming a rich middleland district : a description of country common to every quarter of the kingdom.

The HERBAGE, too, appears foregoing : mostly a kind of temporary sward, which has been described ; with a small proportion of old rough grassland.

The description of CATTLE,—*cows* old or barren, and *heifers* which have missed the bull ; all of the longhorned breed of the district, or from the more northern counties of Cheshire, Lancashire, &c. There is not, in the practice of *this* district, a single *ox* fattened ; except some few *Welsh runts* ; and except, of late years, some *Irish bullocks* ; and these, only by a few individuals.

#### PLACES

is reckoned a moderate time for lean cows to get good meat, with this keep. The price of grains threepence to fourpence a bushel.

In the winter of 1785-6, when hay, at Burton, was 5s. a cwt. ! a principal part of the produce of these breweries was bought up, by cowkeepers and others in the neighbourhood, at fourpence a bushel.

**PLACES OF PURCHASE.** In *this* district, the spring fairs of the neighbourhood ; to which they are brought by dairymen, who do not “ graze ;” or by drovers, who pick them up in the district ; thereby robbing the dairymen or the graziers of part of their profit ;—or bring them from a distance, performing, in this case, the office of useful men.

In South *Leicestershire*, and the more grazing parts of the district, where a sufficient supply of cows cannot be had to stock their “feeding pieces,” the graziers draw cattle from almost all quarters of the kingdom, sometimes going, in a scarce time, as 1786, to the very seacoast of Wales to buy them ; posting from fair to fair, for a week or a fortnight, without returning home ; riding many hundred miles, perhaps, at a journey : a toil which nothing but the hope of “ buying bargains” could enable them to go through. In general, however, they are brought, by drovers, into the markets of the district \*.

The

\* At present (1789) the markets, and the grounds of the more *grazing* parts of the district, are filled chiefly with IRISH CATTLE, of all sizes ; from thin-fleshed

The POINTS most observable by the Midland graziers, would be difficult to define, in detail. Those already held out as the desirable points of a modern breeder, may be taken as those desirable to a modern grazier; the modern breed being, indisputably, eligible in a superior degree, as grazing stock. Nevertheless, there still remain some few old-fashioned graziers, who prefer, or obstinately affect to prefer, *bone to blood*.

In general, however, we may say of the graziers of this district, as of those of every other, that they are led to their choice, not by any fixed principles or defined points, but by intuitive impressions, received from general appearances.

An experienced grazier knows, at sight, (and by merely putting his hand upon her), whether a cow or a heifer will suit him. Her general form and "looks" please him. She is everywhere clean; has little offal about her. Her eye is full and vivid; her countenance

fleshed lathy steers, of forty to fifty stone, to large heavy-fleshed oxen, of seventy or eighty.

For further observations on Irish cattle, see MIN. 122. in the second volume.

nance brisk; her skin alive; and her flesh mellow. All together, she resembles many which he has grazed with success. While he rejects another; because he recollects no instance of her likeness having done well; but, on the contrary, many which she resembles, having turned out unprofitably.

The art of purchasing is principally acquired by practice. The judgement is formed, not altogether by a scientific analysis, in detail; but extempore; being assisted in great part by the memory. And we may venture to say that no man can acquire an accurate and quick judgement, such as is requisite in purchasing cattle in a market, without some considerable share of practice.

Nevertheless, I may repeat, here, what I have said in another place, on the same subject\*,—that the groundwork of this art, like that of every other, is reducible to science; and that the principles being ascertained, the student will be enabled to acquire the requisite judgement much *sooner* than he could without such assistance.

The MANAGEMENT of grazing stock is the same, or nearly the same, here, as in other districts.

\* GLO. ECON. vol. i. p. 245.

districts. Each ground,—provincially “feeding piece,”—has such a number of *cattle and sheep* turned into it, as, from experience, it is known it will carry; allowing about one cow and two sheep to two acres; more or fewer according to the quality of the land, or its state of productiveness\*.

The *shifting* of stock does not enter into the practice of this district: consequently, the practice of grazing by headstock and followers is not here in use. The stock is turned in at Mayday, or the individuals as they are purchased, and remain, probably in the same piece, until disposed of: the only attention bestowed upon this class of stock being, to give an eye to the fences, the pasture, and the water, to have a bull in the piece among cows†, and to attend to the health of the individuals.

#### One

\* From ten to fifteen cows, and fifteen to twenty sheep to twenty acres.

† For the purpose of making them lie quiet: not under the generally received idea that cows feed better—fat faster—for being in calf. Mr. Princep’s cow (see MIN. 119.), though she fattened extremely fast, and to an extreme degree of fatness, was not with calf.

One circumstance in the treatment of grazing stock, in the Midland District, requires to be noticed. This is a want of RUBBING POSTS; especially in the more grazing parts of the district; where, to speak with little latitude, there are townships without a tree in them, or a post of any kind for the cattle to rub against. In *this* district, hawthorns, and other single trees, are common in most large pieces \*.

Another circumstance, however, common, I believe, to the district, reflects credit on the Midland graziers. This is the number of PENS observable in the grazing grounds of the district. Almost every considerable piece has a pen belonging to it; either separately or jointly with adjoining pieces; the same pen sometimes serving three or four pieces. These pens, which are made high and stout enough for cattle, and close enough at the bottom for sheep, are not only useful on many occasions as receptacles of stock, but likewise  
are

\* RUBBING POSTS. In Northamptonshire they are pretty common; but there, as in most other places, they are merely a straight naked post. Whereas a rubbing post cannot be too rugged: a large bough, with the branches left two or three feet long, is more natural, and affords the cattle more *amusement*, than a smooth hewn post. See NORF. ECON. MIN. 66.

are convenient as places of communication, between piece and piece \*.

### MARKETS

\* **GRAZING IN A WET SEASON.** I cannot with propriety omit mentioning, in this place, an incident of practice which has occurred to me, this autumn, 1789, a very wet year.

The general complaint is, that grazing stock, though they have this year rolled in grafs, have not done well; Mr. HENTON of Hoby (in Leicestershire) being singular in saying, that his feeders have done tolerably. Indeed, his stock corroborate his assertion. He had a lot of cows at Loughborough, the 12th of August, the fattest in the show.

But his management is more remarkable than his success. He "foddered them with hay all the wet weather:" that is, HE MOWED THE BROKEN GRASS FOR THEM! beginning under the hedges, and continuing to mow the coarsest patches, throughout the piece.

The first day (the day it was mown) the cattle seldom touched it; but the second or third day, they fell to it freely; eating it "between whites," in preference to grafs. "In the morning it was always the first thing they filled their bellies with!"

The cattle having eaten up the more palatable parts of the herbage, the thistles and other offal were raked up, and carried off the ground: most excellent management!

His stock consisted of about sixty head. At first, one man, only, was employed in mowing, &c. But, before the rainy weather ceased, he set on another man.

What an admirable thought! that which other men suffered to stand waste in itself, an encumbrance to the

· **MARKETS FOR FAT CATTLE.** On the subject **MARKETS**, it has been said, that the southern parts of the district send their fat to *Smithfield*; the northern to *Rotherham*; this quarter of it to *Birmingham*, and the other *manufacturing towns*. Of the last I shall principally speak.

It is observable, that the grazed cattle of this district are sold, much underfat; unfinished: mostly in that state, in which cattle, in Norfolk and Herefordshire, are put to fattening.

This, however, is not intended as an argument against the Midland practice of grazing: the practices may be said to originate in the markets, for which the stock is intended. In *Smithfield*, cattle sell at prices proportioned to their degrees of fatness. While in the markets of this district, even in that of *Birmingham*, where the manufacturers live in a style of extravagance, scarcely any difference is made, between beef that has been highly finished, and that which is in a state of forwardness—fleshy—“meaty.”—This being the case, the butcher will give as much, or nearly

ground, and a nursery of weeds, was converted to a food, more nutritious, in a wet season, than the best of the standing herbage.



nearly as much, by the pound or any other weight, for what are called "meaty things," as for those which are fat.

The *places of sale* are the grazing grounds, and the fairs of the neighbourhood; where they are bought, chiefly, by butchers from Birmingham, with a proportion from Wolverhampton, Walsal, &c. and sometimes from Manchester; and some few are driven out of this district to London. Birmingham may, however, be considered as the grand mart of the district\*.

B b 2

In

\* Yet, extraordinary as it really is, the fairs of BIRMINGHAM are among the worst in the country, for fat stock! the butchers giving the graziers no encouragement to drive their stock to them: preferring the toil of riding twenty, thirty, or perhaps forty miles from home, to pick up their "fat"! spending a principal part of their time, and their profits, in an employment, truly ridiculous.

How convenient it would be to the grazier, as well as to the butcher, to have a WEEKLY MARKET—a *Smithfield*, at or near Birmingham! to the grazier, in thereby having a constant and certain market, whenever he wanted either keep or money; and to the butcher, in saving time and travelling expences. Yet the few which are taken there, at present, are frequently drove out unsold!

But, at present, the day, Thursday, the ordinary market day; is improper: Monday or Tuesday would be a more suitable day: and SUTTON, perhaps, the most suitable place.

In regard to the art of SELLING fat cattle, though it is not, perhaps, equally difficult as that of buying, nevertheless it requires great judgement, and of course great or long practice, to conduct it with propriety. Not the weight of the quarters only, but the quantity of tallow, ought to be accurately estimated.

In judging this, the grazier has one advantage over the butcher : he knows the time his cattle have had, and how they have *done*, during the time they have been at high keep; and another, he sees them from time to time, and perhaps has the opinion of others upon them. The butcher, however, must, in the nature of his employment, acquire a kind of judgement, which the grazier cannot readily arrive at. Nevertheless, there are graziers will judge with great accuracy, both as to weight and tallow; while, incredible as it may appear, there are few butchers who are accurate judges.

On the whole, we may venture to say, that THE ART OF GRAZING rests principally on judgement in *buying* and *selling*; not in this district only, but in the other districts I have yet visited. The mysteries of *management*

*ment* are few. Nevertheless, it is the most dangerous department of rural affairs, the INEXPERIENCED can embark in. Jobbers and butchers are equally hackneyed in the ways of dealing; and it requires some practice to be a match for them. Nevertheless, by attention and perseverance, a sufficient judgment may, in no great length of time, be acquired, to rise to a par with the generality of graziers. For, although there are some few who are deeply versed in the profession, the bulk of graziers are by no means proficient in the art.

PRODUCE. There are, not unfrequently, instances of *heifers* doubling their first cost, by the summer's grass. I have known an instance of two heifers doing this. But they were bought under particular circumstances: namely, of a grazier, who, through want of judgment, thought them "weak constitutioned:" he, therefore, sold them to another grazier, better versed in the art of purchase, for eleven pounds; and, the same day, bought four cows, at ten pounds each. The former were sold, in October, for twentytwo pounds; the latter, at the same time, for

thirteen pounds each. I mention this circumstance (of a thousand others that might be adduced), to show how much of the profits of grazing depends on judgement in buying-in stock.

To speak generally of the ordinary produce of the district,—five to eight pounds is the par price of lean barren cows, in the spring; and nine to twelve pounds, a good price for a fat cow, in autumn: thus leaving four or five pounds for the summer's grass, interest of money, hazard, market expences, and attention. This, however, is reckoned great profit. Fifty shillings, or three pounds, is a more ordinary profit of “common graziers:” that is, of men whose practice is confined, and whose judgement is secondary:

THE PROFITS OF GRAZING RESTING PRINCIPALLY ON JUDGEMENT IN BUYING AND SELLING.

#### REFERENCES TO MINUTES ON CATTLE.

For an instance of the high price of *lean cattle*, with reflections, see MIN. I.

For an instance of a *bad year* for graziers,  
53.

For opinion on the present *scarcity* of stock,  
110.

For

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For an instance of practice in grazing *Scotch runts*, 121.

For an account of an extraordinarily fat *cow*, 119.

For observations on bullocks at turneps, 118.

For further observations on the *scarcity* of stock, and on *Irish cattle*, see MIN. 122.

36.

S H E E P.

THE MIDLAND DISTRICT abounds with SHEEP,—notwithstanding the nature of the soil; which, in general, may be said to be better adapted to cattle, than to sheep.

The situation and the nature of the soil, however, are such as render it, in general, a district in which sheep *may* be kept, with a degree of safety.

The INCLOSURES, that are properly freed from surface waters, and are underdrained

B b 4

where

where requisite, may be deemed *sound* sheep pasture.

On the contrary, the COMMONS and COMMON FIELDS are most of them dangerous to this species of stock. In 1783, a memorable year for the *rot*, the stock of some of the fields were swept away, entirely, by this fatal disease.

The breeds of this neighbourhood are various. They may, however, be reduced to two classes :

*Shortwooled sheep*—inhabitants of the commons and fields—provincially “field sheep;” and

*Longwooled sheep*—principally confined to the inclosures—provincially “pasture sheep.”

FIELD SHEEP are, in some part, reared in the district. But the principal part of the sheep, seen on the commons, and in the common fields, are ewes, brought from the hills of Shropshire, Staffordshire, and Derbyshire; but chiefly from the first; and, having *reared* their lambs, are either fatted in autumn, in the inclosures, or sold fleshy out of the fields, to the Walsal and colliery butchers, or are kept over winter, for another flock of lambs; which, in autumn, are driven into Worcester-shire,

shire, and the lower lands of Shropshire; where they are fatted, either on the autumnal grafs, or are kept over winter, and finished in early spring;—the dealers bringing back a supply of ewes from the Shropshire fairs.

This machine has been going round,—this circulation has been kept up,—time immemorial; and, on reflection, appears to be a traffic founded on rational principles.

Beside the dangerous quality of the commons and fields, to a perennial flock, the keep they afford is not good enough for the “pasture sheep” of this country; but is sufficient for the maintainance of the small hardy mountaineers. It is not, however, sufficiently good to *fat* the lambs, even of this breed; but is equal to the purpose of *rearing* them; though produced by a cross with a longwooled ram. On the other hand, the Shropshire hills are able to maintain their own breed, as breeding stock; but not to fat them: the old ewes are therefore sent, lean, to the open fields of this district; by which means the Worcestershire farmers are supplied with strong lambs, suited to the rich lands of that country.

This

This is a striking specimen of the INTERCOURSE OF DISTRICTS; which, while much of the kingdom lay in an open state, was probably more observable, and much more considerable, than at present.

PASTURE SHEEP. Formerly, there appears to have been only one breed of longwooled sheep, in the MIDLAND DISTRICT: a strong largeboned sort; which is still common to WARWICKSHIRE, and to much of the counties of LEICESTER and RUTLAND; and may, indeed, be still found, in every quarter of the district.

In Warwickshire and Staffordshire, this old breed of the country is distinguished by the name of the "WARWICKSHIRE" breed; in Leicestershire, Rutlandshire, Northamptonshire, and Nottinghamshire, by that of the "OLD LEICESTERSHIRE" breed.

Of this breed, or rather of these two varieties, for they have their distinguishing characteristics, there may, no doubt, be many valuable individuals; and a few flocks, that have been attended to, are of a tolerable quality.

In general, however, they may, without risque, be said to be an unprofitable species  
of



of stock ; and, in many instances, intolerably bad. I was led to the sight of a " true old Warwickshire" ram, the most completely ugly, and altogether, I think, the worst sheep I ever saw \*. His frame large, and remarkably loose. His bone, throughout, heavy. His legs long and thick, terminating in large splaw feet. His chine, as well as his rump, as sharp as a hatchet. As to fat, he had none ; nor flesh enough to ascertain its quality ; though his pasture was good : his skin might be said to rattle upon his ribs, and his handle be conceived to resemble that of a skeleton wrapped in parchment. Yet the proprietor of this creature rode all his ewes with him several seasons ; —giving for reason, that " he always finds his sheep fat enough at the time he wants to sell them : " a time, however, which, I understand, does not arrive until they be some three or four years old..

It

\* Excepting one of the " true old Leicestershire sort," which was shown, *to be let by the season*, at Leicester ram show, in 1789. This creature might be said to be in the lowest state of degeneracy. A naturalist would have found some difficulty in classing him ; and, seeing him on a mountain, might have deemed him a nondescript ; a something between a sheep and a goat,

It must not, however, be conceived that all the rams of the "old flocks" bear the above description; or that all the old-fashioned breeders are equally inattentive to their stock: nevertheless, we may safely say, that, upon the whole, the breeders are unpardonably remiss, and their stock, in general, in a state of shameful neglect.

All that is required to be said farther of the old stock of the country is, that it still has its warm advocates, and its leading breeders.

Mr. PALFREY of Fenham, near Coventry, takes the lead in the Warwickshire breed\*; and

Mr. FRIZBY of Waltham, near Melton Mowbray, in the old Leicestershire.

During the last thirty or forty years, the old stock has been giving way to a MODERN BREED—a NEW VARIETY—which may be said to be a *creation* of the Midland Counties; in

\* In justice, however, to the good sense and discernment of Mr. PALFREY, he appears to have persevered the longer in the old breed, not under the dictates of his own judgement, but in compliance with the prejudices of his customers.

Mr. BARNARD, near Warwick, may perhaps be said to be, at present, the most zealous supporter of the Warwickshire breed.

in some parts of which it has already obtained a degree of establishment, under the name of the "NEW LEICESTERSHIRE" BREED.

This being, at present, the most *fashionable* breed of the island, and, to the GRAZIER, one of the most *profitable*, its history is an interesting subject, and its merits an object of enquiry\*.

The ORIGIN of this breed appears to have taken place in *this* neighbourhood. JOSEPH ALLOM of Clifton, who had raised himself, by dint of industry, from a plowboy, seems to be acknowledged, on all hands, as the first who *distinguished* himself, in the Midland District, for a superior breed of sheep.

He was known to buy his ewes at a distant market; and was, in his neighbourhood, *supposed* to buy them in LINCOLNSHIRE; but, on better information, it appears, that he had them, principally, of Mr. STONE of Godeby, in the Melton quarter of LEICESTERSHIRE.

In

\* The TEESWATER BREED has been already noticed (see YORK. ECON.): the NEW VARIETY OF LINCOLNSHIRE I have not yet seen. Nothing, therefore, contained in these remarks, must be considered as having any allusion to that variety; which, I believe, is the only distinguishable variety of the island, that has not already fallen under my observation.

In whatever manner he raised his breed, it is certain, that, in his day, it was the fashion, among superior farmers; to go to Clifton, in the summer season, to choose and *purchase* ram lambs; giving, as I have been informed, by cotemporaries of Allom, from two to three guineas apiece.

This seems to be the only man who became *distinguishable* as a breeder of sheep, in this part of the island, previously to Mr. BAKEWELL: and, it may be reasonably supposed, the breed, through the means of Allom's stock, had passed the first stage of improvement, before Mr. Bakewell's day.

We may nevertheless advance, and without risque I think, that to the ability and perseverance of Mr. BAKEWELL, the Leicestershire breed of sheep owes the present high state of improvement.

The manner in which Mr. Bakewell raised his sheep to the degree of celebrity in which they deservedly stand, is, notwithstanding the recentness of the improvement, and its being done in the day of thousands now living, a thing in dispute; even among men high in the profession; and living in the very district, in which the improvement has been carried on!

Some

Some are of opinion, that he effected it by a *cross* with the *Wiltshire* breed; an improbable idea; as their form altogether contradicts it: others, that the *Ryeland* breed (see GLO. ECON.) were used in this purpose; and with some show of probability. If any *cross*, whatever, was used, the *Ryeland* breed, whether we view the form, the size, the wool, the flesh, or the fatting quality, is the most *probable* instrument of improvement.

These ideas, however, are registered, merely, as matters of *opinion*. It is more than probable, that Mr. Bakewell, alone, is in possession of the several MINUTIÆ of improvement; and the public can only hope, that he will, at a proper time, communicate the *facts*, for the government of future improvers.

Whenever this shall take place, it will most probably come out, that no *cross*, with any *alien* breed whatever, has been used; but that the improvement has been effected, by selecting individuals from *kindred* breeds;—from the several breeds or varieties of long-wooled sheep, with which Mr. B. was surrounded, on almost every side;—and by breeding, *LANDIN*, with this selection: solicitously

citously seizing the superior accidental varieties produced ; associating these varieties ; and still continuing to select, with judgement, the superior individuals.

The practicableness of this method of improvement will appear in MIN. 60 ; where we find an individual of a very inferior kind of sheep, nearly approaching the best of the improved breed. Had this individual been preserved, by good fortune, or superior judgement, for the purpose of breeding from him alone, a variety much superior to the breed that produced him, might without doubt have been raised.

Let the means of improvement have been what they may, the improvement itself, viewed in its proper light, is evident and great ; evincing, in a striking manner, the genius and perseverance of its promoter. In the improvement of HORSES and CATTLE, Mr. BAKEWELL appears to have acted in competition with other enterprising breeders : but the improvement which has been effected in the Midland breed of SHEEP, may be said to be ALL HIS OWN.

Mr. BAKEWELL, however (as other great men have had), has his DISCIPLES, who have assisted

assisted him, very essentially, in establishing and disseminating the "new Leicestershire" breed of sheep; or, as it might well be named, from the place of its origin, the DISHLEY BREED.

To enumerate the whole of Mr. Bakewell's followers would be difficult and superfluous: nevertheless, it appears to me necessary, to the due execution of this work, to register such individuals as come within the limitation of PRINCIPAL RAMBREEDERS, of the MIDLAND DISTRICT: a task whose only difficulty will be that of avoiding offence, by a misclassification. The best title to precedence appears to be, the length of time, which each has been in what is termed the "Dishley blood."

Mr. Stubbins of Holm, near Nottingham.

Mr. Paget of Ibstock, in this district.

Mr. Breedon of Ruddington, Nottinghamshire.

Mr. Stone, Quarndon, near Loughborough.

Mr. Buckley, Normanton, Nottinghamshire.

Mr. Walker, Wolfsthorp, on the borders of Lincolnshire.

Mr. Bettison, Holm, near Nottingham.

Mr. White, Hoton, Nottinghamshire.

Mr. Knowles, Nailston, in this district.

Mr. Deverel, Clapton, Nottinghamshire.

Mr. Princep, Croxall, in this district.

Mr. Burgefs, Hucklefcot, ———.

Mr. Green, Normanton, ———.

Mr. Robinson, near Welford, Northamptonshire.

Mr. Moor, Thorp, in this district.

Mr. Astley, Odfton, ———.

Mr. Henton, Hoby, Leicestershire.

Befide these leading men, there are many of less repute, in the Midland District, and many others, scattered over almost every part of the island, particularly in Lincolnshire, Yorkshire, and so far north as Northumberland; also in Worcestershire, and Gloucestershire.

It is observable, however, and appears to me an extraordinary circumstance, evincing, in a remarkable manner, the weakness of men's judgements, or the strength of their prejudices, that, notwithstanding the rapid progress this breed of sheep are making in distant parts of the kingdom, and notwithstanding the decided preference given to them, by those who have had experience of them in this district, the majority of the breeders  
and



and graziers, not of Warwickshire only, but of Northamptonshire, Rutlandshire, and Leicestershire, even within sight of Dishley, are inveterately against the breed! and this notwithstanding many of their charming grounds, at present, are stocked with creatures that would disgrace the meanest lands in the kingdom\*.

This seeming paradox can be explained in no other way, perhaps, than in the improper manner in which the improved breed have been promulgated.

Had the Dishley sheep, twenty years ago, been judiciously distributed over the district, and had been, on all occasions, *permitted to speak for themselves*, it appears to me probable, that there would scarcely have been a sheep, of any other breed, now left in the Midland district.

No professional man, whose judgement were not biased, or entirely carried away, by the spirit of opposition, could hesitate a moment

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in

\* NOTTINGHAMSHIRE takes the lead in this improvement. In the country between Nottingham and Dishley, the modern breed may be said to have gained, already, a degree of establishment.

in his choice. But so long as the fire is fanned, and the cauldron is kept boiling, so long the advocates of the breed must expect to be in hot water; and, in the nature of men's passions, so long the new Leicestershire breed of sheep must have its powerful opponents.

It now remains to give a DESCRIPTION of the superior class of individuals of this breed; especially EWES and WEDDERS; in full condition, but not immoderately fat. The RAMS will require to be distinguished in the next section.

The *head* long, small, and hornless, with ears somewhat long, and standing backward, and with the nose shooting forward.

The *neck* thin, and clean toward the head; but taking a conical form; standing low, and enlarging every way at the base; the *forend*, altogether, short.

The *bosom* broad, with the *shoulders*, *ribs*, and *chine* extraordinarily full.

The *loin* broad, and the *back* level.

The *baunches* comparatively full toward the hips, but light downward; being altogether small, in proportion to the fore parts.

The *legs*, at present, of a moderate length; with the bone extremely fine.

The

The *bone*, throughout, remarkably light.

The *carcase*, when fully fat, takes a remarkable form : much wider than it is deep ; and almost as broad as it is long. Full on the shoulder, widest on the ribs, narrowing with a regular curve towards the tail ; approaching the form of the TURTLE, *nearer* than any other animal I can call to mind.

The *pelt* thin ; and the *tail* small.

The *wool*, shorter than long wools in general ; but much longer than the middle wools ; the ordinary length of staple, five to seven inches ; varying much in fineness and weight.

The COMPARATIVE MERIT of this breed will best appear, by placing it, in its present state, in the several lights in which it may be viewed, comparatively with other breeds : thereby, at the same time, ascertaining how far the PRINCIPLES OF IMPROVEMENT have, in this case, been judiciously applied.

In BEAUTY OF FORM, the breed under notice surpasses every other breed I have seen. I speak not of *picturesque*, but of *positive* beauty. Viewed as distinct objects, the individuals of it are peculiarly pleasing to the eye.

I do not, however, mention this as an evidence of their superiority. There are men of the first abilities, and of great knowledge and experience in sheep, who, as has been before mentioned, prefer what is called a *useful* to a *handsome* sort; a rise in the back, or a fall in the shoulders, to a want of flesh and fattening quality. If, however, beauty and utility can be united, which they evidently are in some instances, perfection may be said to be more nearly approached.

UTILITY OF FORM. The most distinguishing characteristics of this breed,—that which might be considered as its specific character,—is the fulness, and comparative weight, of its fore quarters.

This, however, seems to be contrary to the general principle of improvement, and affords matter of argument to the advocates of the old stock; who contend, that this form throws the meat upon the least valuable parts; legs and saddles, not shoulders and breasts, being the favorite joints.

The advocates for the new breed *argue*, in return, that the majority of the eaters of mutton are of the poorer class, and that the grand object of the improvement is their supply;

supply ; *arguing* farther, that upon a given set of bones, and with a given quantity of other offal, a greater weight of meat may be laid on the fore quarters, than on the hind ones.

OFFAL. Another distinguishing character of the modern breed is the smallness of their *bone*, comparatively with that of the old stock, and most other breeds ; not of the legs only, but of the ribs and other parts. I have seen a rib of a sheep of this breed contrasted with one of a Norfolk sheep : the disparity was striking ; the latter nearly twice the size ; while the meat which covered the former was three times the thickness : consequently *the proportion-of meat to bone* was, in the one, incomparably greater than in the other.

Therefore, in this point of view, the improved breed has a decided preference. For, surely, while mankind continue to eat flesh, and throw away bone, the former must be, to the *consumer* at least, the more valuable.

The *other offal* is also light. The pelt thin, and the head small ; and, *it is said*, the in-

testines, and even the blood, are small in a similar proportion.

That the last two are comparatively small, in proportion to the carcase, when this is loaded with fat, in a manner that the carcase of no other breed of sheep, probably, is capable of laying on, will be readily granted. But that they bear a smaller proportion to the carcase in this breed, than they do in others of the same natural size, in the same condition, and going in the same pasture, remains, I believe, among a thousand other things relating to livestock, to be proved by a series of accurate experiments.

FLESH. The *criteria* of good and bad flesh, while the animal is alive, differ in different species of animals; and to ascertain them with sufficient accuracy, to render them safe guides in every stage of poverty and fatness, and to render definitions of them, in the several stages, intelligible, would require a course of experiments and observations on a variety of individuals of each species; attending them through every stage of fleshiness to that of finished fatness; following them from the grazing ground to the slaughter house, and from thence to the table; and this with an accuracy of attention that has probably never been given; nor will,  
in

in all probability, ever take place, so as to become of PUBLIC UTILITY, without the patronage of a PUBLIC INSTITUTION.

Nevertheless, in this district, there are men, who, from a long course of attentive practice, though not, perhaps, scientifically pursued, have acquired a sufficient degree of knowledge of this subject, to enable them to judge, by the touch, while the animal is alive, and low in condition, what the quality of the meat will be, when fat, and the animal is slaughtered; and this with some degree of accuracy: adequate, at least, to our present purpose; which is that of giving the student a general idea of the subject; as well as that of registering, for the use of future improvers, the ideas at present known respecting it.

The quality of the FLESH of CATTLE is best ascertained when the animal is in a state of fleshiness,—full of condition, but not fat. In this state, if the flesh be bad, it handles *hard*, with a degree of *barbness*; if good, it is *soft* and *mellow*, with a degree of “*looseness*,” or rather *suppleness*, or *flexibility*; which, as the animal acquires a state of fatness, gives place to a degree of *firmness*—*fastness*;—a  
quality

quality so nearly allied to hardness, that, without attending to the general state and condition of the animal, they might, by the inexperienced at least, be mistaken for each other.

But the FLESH of SHEEP is to be judged by somewhat different criterions. These criterions, however, are not yet fixed. Professional men — breeders even of the first class — differ in their ideas of the subject : a proof that it has not yet been sufficiently studied.

It is, nevertheless, allowed, by all superior breeders, that *looseness* is a *bad* quality of the flesh of *sheep*, when living ; as being the criterions of coarse-grained, spungy mutton.

But the criterions of *good* flesh are not yet settled. One superior breeder is of opinion, that if the flesh is not loose, it is of course good ; holding, that the flesh of sheep is never found in a state of hardness, like that of ill fleshed cattle :—while others make a fourfold distinction of the flesh of sheep ; as *looseness*, *mellowness*, *firminess*, *hardness* : considering the first and the last equally exceptionable, and the second and third equally desirable ;



desirable ; a happy mixture of the two being deemed the point of perfection.

The flesh of sheep, *when slaughtered*, is well known to be of various qualities. Some is composed of large coarse grains, interspersed with wide empty pores, like a sponge : others, of large grains, with wide pores filled with fat : others, of fine close grains, with smaller pores filled with fat : and a fourth, of close grains, without any intermixture of fatness.

The flesh of sheep, *when dressed*, is equally well known to possess a variety of qualities : some mutton is coarse, dry, and insipid ; a dry sponge ; affording little or no gravy of any colour. Another sort is somewhat firmer ; imparting a light-coloured gravy only. A third plump, *short*, and palatable ; affording a mixture of white and red gravy. A fourth likewise plump and well flavored ; but discharging red gravy only ; and this in various quantities.

It is likewise observable that some mutton, when dressed, appears covered with a thick, tough, parchmentlike integument ; other, with a membrane comparatively fine and flexible.

But

But these, and some of the other qualities of mutton, may not be wholly owing to *breed* ; but, in part, to the *age*, and the *state of fatness*, at the time of slaughter ; and I wish to have it understood, that what is here offered, is intended to agitate, rather than to define with sufficient accuracy, a subject which may be said to be, at present, in a state of obscurity ; but which is well entitled to a scientific discussion.

FAT. Examined in this light, whether we consider the *degree* of fatness, or their *natural propensity* to a state of fatness, even at an *early age*, the improved breed of Leicestershire sheep appear with many superior advantages.

I have known an instance, in the ordinary practice of a minor breeder, of "lamb-hogs" (yearling wedders,—barely a year old), being sold in April (1786, a dear time) for 27s. to 28s. a head ; while the common run of ill bred things were not worth more than 18s. each. There has, I am told, and by indisputable authority, been an instance of yearlings of the best blood being sold, in August (about a year and a half old), at 35s. a head !

a head! and other instances of their profitableness, to the *grazier*, will appear in the MINUTES.

The GRAZIER's object, undoubtedly, is to get sheep that will fat *quickly*: for even supposing them to eat more food than sheep which fat more slowly, there is a material advantage accruing from their reaching market a fortnight or three weeks sooner than other sheep: grafs mutton, for instance, bears a better price, at its first coming in, than it does a few weeks afterward; when a glut seldom fails of being poured into market. So far, however, from these sheep consuming more food than others, it seems *probable* at least, that sheep which are, in their nature, disposed to a state of fatness, become marketable at a smaller expence of food, than sheep which are, naturally, of a leaner constitution.

This is among the first of the many things desirable that remain to be *proved*. Some attempts have been made, in this district. But experiments, of a complex nature, require a degree of leisure, a minuteness of attention, a fund of patience and perseverance, and, above all, a habit of experimenting,

rimenting, that few men of business possess.

The *degree of fatness* to which the individuals of this breed are capable of being raised, will, I am afraid, appear incredible, to those who have not had an opportunity of being convinced by their own observation. I have seen wedders, of only two shear (two to three years old) so loaded with fat, as to be scarcely able to make a run; and whose fat lay so much without the bone, it seemed ready to be shook from the ribs, on the smallest agitation.

It is common for the sheep of this breed to have such a projection of fat upon the ribs, immediately behind the shoulder, that it may be easily gathered up in the hand, as the flank of a fat bullock. Hence it has gained, in technical language, the name of the **FOREFLANK**; a *point* which a modern breeder never fails to touch, in judging of the quality of this breed of sheep.

What is, perhaps, still more extraordinary, it is not rare for the rams, at least, of this breed to be "**CRACKED ON THE BACK**;" that is, to be cloven along the top of the chine,  
in

in the manner fat sheep generally are upon the rump. This mark is considered as an evidence of the best blood.

Extraordinary, however, as are these appearances, while the animals are living, the facts are still more striking after they are *slaughtered*. At Litchfield, in February 1785, I saw a fore quarter of mutton, fatted by Mr. Princep of Croxall, and which *measured* upon the ribs *four* inches of *fat* !

But this I saw far exceeded in the mutton whose bone has been mentioned, and which, notwithstanding its extreme fineness, was covered with about an inch of muscular flesh, interlarded, and *five* inches of fat !

Since then (1786) several sheep of this breed have laid six inches of meat on their ribs.

It is observable, that in sheep of this extreme degree of fatness, the muscular parts decrease in thickness as the fatness increases, and are so intermingled with fat as to give the whole a fatty appearance ; and this most especially in aged sheep ; which, as aged cattle, have more fat in proportion to lean, than younger carcases. A loin of mutton of a sheep (ten shear) of twenty six pounds a quarter,

quarter, weighed, when the fat was taken off, only two pounds and a half !

These are certainly interesting facts. But reflection aptly suggests the question, to what stomach can mutton like this be grateful ?

The answer held out is, "fat mutton is the poor man's mutton : it goes farther than lean ; and has, of course, a smaller proportion of bone than lean mutton. A poor man gives eightpence a pound for bacon, but only five-pence for fat mutton."

This resemblance, between fat mutton and bacon, is not altogether imaginary. When salted, and kept some time in pickle, even the palate perceives a strong resemblance. The advocates for growing bacon on sheep's bones, instead of producing it, as heretofore, upon those of swine, will say, that the art of preparing it has already been carried so far, as to deceive the palates, even of connoisseurs in eating. If they can really supply the markets with good bacon, at fourpence or fivepence a pound, their country will certainly have some reason to thank them. But this by the way.

It

It is also observable, in this place, that the breed of sheep under consideration, though they lay so great a quantity of fat upon the bones, seldom, in the butcher's phrase, "*die well*:" while the Norfolk sheep, for instance, as seldom "deceive the butcher." This accounts, in some measure, for the preference given to the latter, by the butchers in Smithfield. Tallow is a kind of boon which, if not forthcoming, incurs a disappointment the butcher cannot brook \*.

The Leicestershire sheep, however, appear to me to possess a quality, which more than counterbalances that deficiency. They weigh above their appearance. They have, likewise, less ossal (head feet and pelt), and, when fully fat, *proportionably* less "inside," than sheep in general. When highly finished, they appear as a solid lump of flesh. Though small to the eye, they will weigh thirty, or perhaps, forty pounds a quarter. Their flesh

is,

\* With respect to TALLOW, however, much depends on the AGE at which the animal is butchered; much, also, on BREED. Thus, were the new Leicestershire sheep to be kept on to three years old, their produce of tallow would be increased: and the Norfolk breed, though mostly butchered at two years old, are remarkable for their produce of tallow.

is, in reality, firmer than that of sheep which collect or lay up their fat within, while their muscles and their adipose membranes are less porous and spongy.

On the whole, we may venture to say, that, in respect to CARCASE, the NEW LEICESTERSHIRE sheep have a decided preference to most, if not all, other breeds; and that the PRINCIPLE OF IMPROVEMENT is, *this far*, well founded.

WOOL. Viewing the coat, abstractedly from the carcase, the Leicestershire sheep, compared with most other longwooled sheep, appear to disadvantage; and the Leicestershire breeders, perhaps, may seem liable to a degree of censure. Indeed, the coat, throughout the improvement, appears to have been set at nought; the carcase, alone, having engrossed the whole attention of the improvers.

But this is conformable with the general principle of improvement. Flesh—*human food*—is the object the improvers have had in view; and it is highly probable that the more sustenance there is expended on the wool, the less there will remain for the carcase; beside a heavy fleece being, at certain seasons, inconvenient,



convenient, and not unfrequently fatal, to the sheep.

Nevertheless, it appears, evidently, that a deficiency in the coat has, more than any other circumstance, hurt this breed of sheep in the eyes of the old graziers ; and has, beyond dispute, greatly retarded their adoption.

It is a circumstance somewhat extraordinary, however, and which, in justice to the breed, ought to be made public, that the deficiency of coat, which has done them so much injury, has scarcely any other existence than in the *arguments* of their own advocates ! who absurdly affect to prize them for a poverty of wool : holding out, in the *wildness of argument*, that a breed of sheep *without wool* would be the most desirable ! No wonder that *such arguments* should produce in the minds of men, who know the value of a fleece of wool, and who, perhaps, have only seen the sheep *in argument*, should conceive unfavourable ideas of them, and consider the stir that has been made about them, as a visionary flight, above their comprehension.

I mention these ridiculous arguments, the rather, and with greater freedom, as they not only retard the progress of this improvement,

but militate against its leading principle; that of laying weight on the most valuable parts: for supposing an increase of wool incurs, necessarily, a decrease of carcase; yet, surely, wool at eightpence a pound (the medium price it has now been at some years) is more valuable, to the grazier, than mutton at fourpence.

The *fat* is, this breed of sheep, when *seen* and *examined*, are *not greatly* deficient in wool. The wethers generally run about four to the tod (of 28 lb.); the ewes about four and a half; the fleeces of the former weighing six to eight, of the latter five to seven pounds each.

Indeed, their cooler advocates *argue*, and with some show of *reason* on their side, that they not only produce more mutton, but more wool, *by the acre*, than any other breed of sheep.

This however remains, with the other desiderata relating to livestock, to be *proved*, by a series of accurate experiments.

GENERAL OBSERVATIONS. From this comparative view, it evidently appears, that the modern breed, of Leicestershire, are a valuable variety of longwooled sheep.

In

IN CARCASE, they may be said to be nearly perfect \* : superior, at least, to any other breed of longwooled sheep I have seen.

IN WOOL, however, they fall short, I believe, of every other longwooled breed : owing principally, it should seem, to a false principle of improvement.

Nevertheless, taking them as they are at present, they are, to the *grazier*, professionally and distinctly considered, a very profitable breed of sheep.

It now remains to place them among the other breeds of sheep in the island, and consider the whole, collectively, as a species of domestic animal.

The use and value of the CARCASE, as a species of animal food, being obvious, we proceed to examine the uses and value of the WOOL.

In the warmer climates, savages go naked, and civilized societies may dispense with vege-

D d 3 table

\* Viewing this as a distinct breed, the disproportionate weight of the forequarters appears to me an imperfection. But considering the present form of these sheep, as being capable of correcting the imperfections of almost every other breed of longwooled sheep, it might, in figurative language, be said to be *more than perfect*.

table coverings. Flax and cotton may screen the body from the sun, and give it, occasionally, the requisite degree of warmth.

But in more frigid cliines, the natural nakedness of the human body requires a warmer covering: animal productions are in a degree necessary. In the savage state, the entire skins of animals are transferred from brutes to the human body. But, in a state of civil society and cultivation, the native animals are no longer adequate to the supply. It has, therefore, been found requisite to domesticate an animal, for the purpose of furnishing a substitute.

In the choice of this animal, there appears to have been no alternative. Indeed, when we consider the natural defencelessness of the sheep, among other animals in a state of nature, human vanity is ready to suggest, that it was formed for the benign purpose of furnishing mankind, in a state of civil society, and in a situation of inclemency, with covering, of which they are naturally destitute. The quantity and quality of their fur, and the circumstance of its being easily collected, year after year, renders it indisputably, in the  
present

present state of society, and in the climature of this island, the most valuable of animal productions. There are many animals capable of affording us food, equally wholesome ; but no one, in nature, able to furnish us with clothing, equally comfortable.

Hence, even as a source of happiness to individuals, the coat of the sheep is an object of attention. But when we view it, at the same time, as the encourager of industry, and the main support of commerce, it becomes, in this country, an object of still higher importance.

This nation, in particular, might be happy within itself, and respectable among other nations, without the carcase, but not without the coat ; which is well known to be the grand basis of our commercial, if not of our political consequence. Beside, it is an indigenous produce of the island, which can always be had at will, and is not, like many other materials of manufacture, liable to the fate of conquest, or dependant on those who shall hold the empire of the sea.

Therefore, as an object of NATIONAL ATTENTION, the coat of the sheep is of the first importance ; and every wilful attempt to supplant or debase it, is an act of treason against the state.

Extending this enlarged view of the useful purposes of sheep to the several branches of RURAL ECONOMY, a third valuable property appears. Sheep, viewed collectively, beside affording food and covering to the human body, are applicable to the use of MELIORATING THE SOIL. And a fourth is equally evident. Sheep, if properly chosen, render productive a class of country, which makes no inconsiderable part of the surface of this island, and which, without them, would, while it remains in its present state, lie entirely waste to the community. The description of country here meant is HEATHY MOUNTAIN.

In this general view of the INTENTIONS for which sheep are propagated in this island, the *form* and *disposition* become entitled to no inconsiderable share of attention.

To the mere GRAZIER, it is true, it matters not how short the legs, how compact the carcase, or how sluggish the disposition, of his sheep; so they will travel to market: quietness is, to him, a desirable quality. It is immaterial, to him, whether the face be black or white, whether the head has horns or knots, whether the wool and the legs be short or  
long,

long, or whether the bones lie in this or that form,—any farther than as such points are characteristic, or not, of a profitable animal, *to him*. The shambles must determine the value of his carcase, and the woolforter's warehouse the quality of his coat. The butcher and woolstapler *jointly* are the men whom the grazier has to look up to; and that sheep which will fat the soonest on a given quantity of food, and whose carcase and wool *jointly* will fetch the most money when the animal is fat, is the most profitable sheep to the grazier; no matter as to size or form, the length or lightness of wool, or the colour or length of leg. These, to a mere grazier, in a well foiled inclosed country, are not objects of attention; provided a disposition of wildness, and a desire for rambling, do not thereby become a consequence\*.

But

\* It has been observed, foregoing, that the legs of the improved breed have been considerably lengthened, since their first stage of improvement; and with a good effect: they are now better nurses, and better able to travel to market, than they were before. But it appears to me that the improvement, in this respect, has reached the degree of perfection; and, perhaps in some individuals, has already overtopped it: I have seen  
strong

But, to a MOUNTAIN SHEPHERD, activity is an essential property of his stock. There are many thousand acres of heathy mountains, on which the breed of sheep under notice could not exist. The same beds of heath, which afford the deerlike inhabitants of those wilds a principal part of their sustenance, would *smother* a shortlegged longwooled sheep. A furze cover, or a thicket of thorns and briars, would be, for this, as eligible a pasture.

For the ARABLE FARMER, who keeps sheep for the purpose of the FOLD, the longwooled breeds are equally improper. He, likewise, wants an active, cleanlimbed, longlegged, shortwooled sheep, that can travel, in all seasons, without fatigue. In open barren countries, where sheep have half a mile, or perhaps a mile, to go to fold; and, when they return to their walk, have a great space of ground to go over, before their hunger be satisfied, remaining upon their legs almost the day through,

strong symptoms of *wildness* in this breed: a property of sheep, adapted solely to the grazier, which is among the first of bad properties to be avoided: and domestic animals, in general, appear to be in a considerable degree wild, or *cadish*, according to their respective powers of flight.



through, shortlegged longwooled sheep are useless in this intention. I tried them in Norfolk, on a clean sandy soil, with a good walk, and an easy drift. They sunk under what heath sheep would have got fat upon; and on which the larger breed of Norfolk throve, as store sheep.

It is, however, held out by the advocates of this breed, that they are, now, since their legs have been lengthened, calculated for the fold; having been proved in this purpose.

It is readily granted, that, for a few weeks, or a few months of fine weather, immediately after they have been shorn, they may be well enough adapted to folding. But, whoever has seen "*longwooled sheep*" (no matter as to any nice distinction of sorts) waddling to and from the fold, in any other season, with loads of mud and water hanging to them, equal perhaps to twice the weight of their natural coats, would never think of spoiling a valuable species of *grasland* sheep, under an idea so truly visionary; while we have other breeds, I mean, which are, already, adapted to the purpose.

Nevertheless, it is much to be feared, that their legs have been lengthened, and their  
coats

coats shortened, under the *extravagant* idea of rendering them fit for *all* the purposes of rural economy, thereby qualifying them to fill *every* useful purpose of sheep, in order that they may become the *sole* breed of the island !!!

Viewing sheep generally, and in their various capacities and intentions, as well NATIONAL as ECONOMICAL, it appears demonstrably, that, of the numerous breeds and varieties, at present in this island, some *three*, *four*, or *five* distinct breeds are, indisputably, and indispensably, necessary to its present state of prosperity.

A very longwooled sheep, as the Lincolnshire \*, or the old Teeswater, for the richest of sound grasslands; and for the finest worsted manufactures.

A second, as the new Leicestershire, for less fertile grassland, as well as for rich inclosed arable lands, on which the fold is not used; and for the coarser worsteds, stockings, bays, coarse cloths, blankets, carpets, &c.

A third,

\* I speak of the old Lincolnshire: the new variety, I understand, are equally well, or still better, woolled.

A third, a middlewooled breed, as the Wiltshire, the Norfolk, or the Southdown (of Suffex), or the three, for well soiled arable lands, on which folding is practised; and for cloths of the middle qualities \*.

A fourth, a finewooled sort, as the Ryeland, for the finest cloths †.

And a fifth, as the Shropshire, or a still more hardy race, for heathy mountain.

This general view, of the useful purposes to which sheep are applicable in this island, has not been taken with the intention of depreciating the breed under consideration; but with the design of placing them in their true light, and of assigning them their proper soil and situation.

Nor can it be published with a view to censure the spirited improvers of this breed, while the result of it reflects on them so much credit: they

\* By cloths of the MIDDLE QUALITIES, I mean narrow cloths, of three or four, to broad cloths, of twelve or fourteen, shillings a yard: a latitude of quality which *no one* of the three breeds, here particularized, can, I believe, fill up; the *three*, or other breeds, equally *various* in the qualities of their wool: being requisite to the present state of the woollen manufactory of this island.

† See GLO. ECON.

they have evidently raised into existence a breed of sheep, which is peculiarly well adapted to their own soil and situation; and, in doing this, have infinite merit; as having acted on the grand basis of all rural improvements. And although I have already expressed myself generally on this subject, I think it proper to repeat, in this place, that, for grasslands of a middle quality, as well as for arable lands where the fold is not in use,—a description of country which includes a large proportion of the valuable lands of the island,—the modern breed of Leicestershire sheep may, without undue praise, be said to be near perfection; and that *so long as a full demand for the species of wool they produce continues*, so long they, in their nature, must be, *to the grazier*, a very profitable breed of sheep: and further, that, so long as any other breed of longwooled sheep remain with thin chines and loose mutton, so long they must be, *to the breeder*, a still more profitable species of livestock.

**BREEDING.** To give a comprehensive idea of this subject, the males and the females must pass separately in review.

**RAMS.**

**RAMS.** In the practice of the Midland District at large, the management respecting rams is similar to that of other parts of the island; the breeders *rearing* or *purchasing* them.

It is observable, however, that the advocates of the old breeds, though they will not adopt the modern stock, have fallen, in some degree, into the modern practice of *letting by the season*.

Mr. PALFREY (mentioned above) lets a considerable number of the Warwickshire \*; and Mr. FRIZBY a still greater number of the old Leicestershire: both of them, however, at low prices, comparatively with those given for the MODERN BREED, of which chiefly I shall speak under this head †.

The

\* Mostly, however, tingured, at present, with the new Leicestershire blood.

† Mr. FRIZBY is said to let not less than “four-score” rams, annually, at the price, one with another, of five guineas a ram. At Waltham fair, in September 1789, Mr. F. had a show—(a fair to himself)—consisting of about an hundred rams of different ages. And every year, it seems, the principal part of his rams are let on that day. Thus, for nine or ten months keep of a hundred rams, and keeping open house one day, he is making some hundreds a year.

The rams of the MODERN BREED are never *sold*; but are passed from breeder to breeder, *by the season*, only.

For the purpose of promoting this intercourse, each principal breeder has his SHOW OF RAMS; commencing, by common consent, the 8th of June; and lasting until Michaelmas, or until the whole are let.

During a few weeks after the shows commence, every rambreeder may be said to keep open house.—Breeders and others, from all quarters of the kingdom, as well as the promoters of the breed who reside in the neighbourhood, attend these shows; going in parties from one to another: some to take; others to see and pass their judgements.

These private exhibitions close with a PUBLIC SHOW, at Leicester, the tenth of October; when rams of every description, but mostly an inferior sort of the improved breed, are collected; being brought in waggon; many of them a considerable distance; some to be *sold*; but chiefly to be *let*.

This show has been held, I believe, time immemorial; not, however, for the purpose of *letting*; but for that of *sale*.

The

THE LETTING OF RAMS, BY THE SEASON, has long, I understand, been a practice in LINCOLNSHIRE\*.

THE ORIGIN, in the MIDLAND DISTRICT, may be traced—to a ram let, by Mr. BAKEWELL, at Leicester fair, about forty years ago, at the low price of sixteen shillings †.

Humble, however, as was this beginning, it proved to be the first stone of the foundation of a department of rural business, that has already risen to an astonishing height, and may, for some length of time, continue to bring in a copious source of wealth to the country.

The method of conducting this novel branch of rural business will require to be detailed.

In the MANAGEMENT OF RAMS, kept for the purpose of letting by the season, the following particulars require attention.

The

\* Whether the *letting* of rams is, or is not, an ancient practice, in England, the business of *dealer* in rams is, probably, of long standing; or whence the *surname* of TUPMAN? a provincial appellation, at present, synonymous with RAMBREEDER.

† Mr. B. letting two more, the same day, at seventeen shillings and sixpence each.

The choice, &c. of ram lambs.

Making up rams for showing.

Method of showing.

The points of rams.

Method of letting.

The conditions of letting.

The prices given.

Treatment after letting.

Sending them out.

Method of using them.

Expected treatment while out.

Treatment after their return.

The principal rambreeders save, annually, twenty, thirty, or perhaps forty RAM LAMBS; castration being seldom applied, in the first instance, to the produce of a valuable ram.

For, in the CHOICE of these lambs, they are led more by blood, or parentage, than by form; on which, at an early age, little dependence can be placed.

Their TREATMENT, from the time they are weaned, in July or August, until the time of shearing, the first week in June, consists in giving them every indulgence of keep; in order to push them forward for the show: it being the common practice to let, such as are fit



fit to be let, the first season ; while they are yet yearlings—provincially “sharhogs.”

Their first pasture, after weaning, is pretty generally, I believe, clover that has been mown early, and has got a second time into head : the heads of clover being considered as a most forcing food of sheep. After this goes off, turneps, cabbages, colewort, with hay, and, report says, with corn. But the use of *this* the breeders *severally* deny ; though *collectively* they may be liable to the charge.

Be this as it may, something considerable depends on the ART OF MAKING UP ; not lambs only, but rams of all ages. Fat, like charity, covers a multitude of faults ; and, beside, is the best evidence, their owners can produce, of their *fatting quality*,—their natural propensity to a state of fatness : while in the fatness of the sharhogs is seen their degree of inclination to fat, at an *early age*.

Fatting quality being the one thing needful, in grazing stock, and being found, in some considerable degree at least, to be hereditary,—the *fattest rams* are of course the *best* : though other attachments, well or ill placed, as to *form*, or *fashionable points*, will perhaps

have equal or greater weight, in the minds of some men : even in this enlightened age and district.

Such shearlings as will not make up sufficiently, as to form and fatness, are either kept on to another year, to give them a fair chance, or are castrated, or butchered, while sharhogs.

SHOWING. The shows of the principal breeders consist, by common consent, of forty rams each ; mostly from one to five shear ; they being seldom found efficient after that age : some, however, will continue in vigour to the sixth or seventh year \*.

During the show, they are mostly kept in small inclosures, of two, three, or four acres ;  
with

\* But, even at these ages, the decay of vigour is not *natural* ; but is brought on prematurely, by the unnatural state of fatness in which they are kept, and of which a variety of diseases, as well as a general unwieldiness of frame, are inevitable consequences. Female sheep are found to be prolific to a greater age.

It is observable, however, that the females, as well as the males, of the breed under notice, enter the stage of decay sooner than those of other breeds. This circumstance is accounted for, in their entering the stage of fatness sooner than other sheep ; and there may be some truth in the idea.

with three, four, or more rams in each ; according to their ages, and the advancement of the season.

In a corner, or other convenient part of each paddock, a small pen, made with hurdles, is placed ; for the purpose of handling them. Into these pens they go, through custom, as tractably, as worked oxen to their stalls. Indeed, the old rams, from the unwieldiness of their frame, and the load of fat they have to carry at this season, as well as from habit, will suffer themselves to be handled abroad ; and even appear to take a pleasure in the respect which they have shown them.

Of late, *a new method of showing* has been struck out by the leading breeder, and adopted by *one*, at least,—his *faithful* follower. Instead of showing them abroad, and driving three or four of them up together, into a pen, they are shut up in hovels, and shown separately ; being *never seen together*.

Among accurate judges, this mode of showing may be well enough ; but, to those who have had less experience, it gives offence ; as it deprives them of their best guide, compari-

son ; and I can see no fair advantage accruing from it to the letter.

The desirable POINTS of a ram are those which have been already enumerated. But the *choice of the hirer* is determined, in some measure, by the intention for which he is about to hire ; as whether it be that of getting *wedders*, or mere grazing stock ; or *rams* ; for the purpose of letting. Hence the grazier, and the rambreeder, choose different sheep \*.

The characteristic difference between what is termed a “ RAMGETTER,” and a “ WEDDERGETTER” or a “ good grazier’s sheep,” is that of the former being everywhere cleaner, finer : the head small, the bone and ossal light, the flesh good, and the form beautiful. The mere grazier likes a ram no worse for having a strength of frame, and is less scrupulous about his form than the rambreeder ; whose great object is fineness : his  
ewes,

\* There is, however, one general guide, common to them both, and to which the judicious part of both pay some attention ; namely, the imperfections of their ewes. In whatever quality or point they are most deficient, a ram possessing that particular quality or point, ought certainly to be chosen.

ewes, and the natural tendency of the breed, serve to give his offspring size and substance\*.

LETTING. A novel circumstance has likewise taken place, lately, in the business of letting. The long established custom of *setting a price* is exploded; at least, by Mr. Bakewell and one of his disciples; whose customers are now left to make their own valuations, and—bid what they please.

This, as well as showing them separately, gives great offence; especially to strangers; who cannot brook the idea of being “both buyers and sellers.”

The latter, however, has more than one advantage, in reserving the price (provided he do not thereby drive away his customers): he is, in effect, letting to the best bidder. Beside, he is, through this mean, enabled to *regulate his prices to his customers*, without giving any of them *pointed* offence.

The principal breeders are, in the nature of their business, competitors; and it is

E c 4

no

\* Some, however, set aside this distinction; and, if there be no possibility of breeding grazing stock too fine, they are undisputably right.

no more than common good policy, in the leader at least, to advance himself, and keep back those who press upon him closest. It is therefore good management, in him, to let a superior ram to an inferior breeder, whose ewes are yet of base blood, at a lower price, than to one who is farther advanced, and whose ewes, perhaps, are nearly equal to his own: for, if the hirer may not thereby be able to get the lead from him, he may run away with part of the best prices; and the only line, the leader has to tread, is, either to refuse him, or to make him pay in the first instance. And, again,—sometimes two or three capital breeders will join, in the hiring of one superior ram; and, in this case, the blood being more widely dispersed, the price ought to be, and always is advanced, in proportion to the number of partners.

Hence, *in the leader*, a reservation of price may be allowable; especially in the letting of first-rate rams.

CONDITIONS OF LETTING. Notwithstanding the number of years the letting of rams has now been in use, and the extraordinary height to which the prices have risen, the transaction does not appear to have received, yet,  
any

any settled form ; nor to have been rendered *legally* binding, by any written articles, or conditions of letting ; much being still left to the *honor* of the parties.

It is, however, generally understood, that the price agreed upon shall not be paid, unless the ram in contract, "*or another as good,*" impregnate the stipulated number of ewes. If, through accident or inability, part only be impregnated, a proportional part of the price is abated. If he die while at ride, the loss falls on the letter, whether his death happen through accident or neglect : no *case*, I understand, having yet been otherwise determined.

It is likewise understood, that the hirer shall not suffer him to serve any other than his own ewes ; and, of these, no more than a stipulated number, which is proportioned to the age or ability of the ram, and the mode of using him. And further, that if a grazier hire a valuable ram, at a *weddergetter's* price, (which is not unusual at the wane of a season, when valuable rams happen to be unlet) it is understood—or rather agreed—that he shall not rear *rams* from him : a condition which may frequently be advantageous to  
both

both parties. The letter pockets five or ten guineas, which otherwise he might not have had; and the hirer, by suffering himself to be "tied down" as it is termed, gets a greater improvement in his stock, than otherwise he could have got, for the same money.

The time of paying the money is, I understand, unfixed: seldom, I believe, until after the ewes have brought proofs of the ram's efficiency.

THE PRICES FOR RAMS BY THE SEASON. From the first letting (see page 417.) to the year 1780, the prices kept gradually rising, from *fifteen shillings* to *a guinea*; and from one guinea to *ten*. In 1780, Mr. BAKEWELL let several at *ten guineas* each; and, what is rather inexplicable, Mr. PARKINSON of Quarndon, let one, the same year, for *twenty-five guineas*: a price which then astonished the whole country\*.

From

\* This ram was of the Dishley blood: but, though he was let at this superior price, and to a man of superior judgement, he did not long preserve the lead. Mr. Bakewell has been the greatest gainer by the circumstance; by which, in much probability, he has profited some thousand pounds.



From that time, to 1786, Mr. Bakewell's stock rose rapidly, from ten to a *hundred guineas*; and, that year, he let two thirds of one ram (reserving one third of the usual number of ewes to himself) to two principal breeders, for a hundred guineas each; the entire services of the ram being rated at *three hundred guineas*! Mr. Bakewell making that year, by letting twenty rams only, more than a thousand pounds!!

Since that time, the prices have been still rising. *Four hundred guineas* have been repeatedly given\*. Mr. Bakewell, this year, (1789) makes, I understand, twelve hundred guineas, by three rams (brothers, I believe), two thousand of seven, and, of his whole letting, full three thousand guineas†!!!

Beside this extraordinary sum made by Mr. Bakewell, there are six or seven other breeders, who make from five hundred to a thousand guineas each. The whole amount of monies produced, this year, in the Midland

\* Not, however, by individual breeders: three hundred have been given by an individual.

† Mr. B. now lets nothing under twenty guineas: a well judged regulation, which will probably be beneficial both to himself and his customers.

land Counties, by letting rams of the modern breed, for one season only, is estimated, by those who are adequate to the subject, at the almost incredible sum of TEN THOUSAND POUNDS.

It is, I know, a popular idea ; especially of those who, living at a distance, have only heard of these extraordinary things, without having an opportunity of coming at facts ; that the extravagant prices, which are talked of, are merely nominal ; the principal part of the money being returned ; the actual prices given, being small, in proportion to those held out.

This, however, is, I believe, and on the best authority, an erroneous idea. At the first setting out of the high prices, there might be some transactions of that nature ; but, if they ever existed, they have ceased long ago. Mr. Bakewell, at present, has the name, at least, of being parsimonious, even to the shepherds of the flocks on which his rams are employed. His highest present, I understand, is five shillings ; if the price be under fifty guineas, only half a crown.

The enormoufness of these prices may be explained on other grounds.

The

The *high* prices are not given by GRAZIERs, for the purpose of getting WEDDERs, as grazing stock ; but by RAMBREEDERs, for the purpose of getting RAMs, to be let to graziers : the *highest* being given by the PRINCIPAL BREEDERs, only ; not for the purpose of getting rams, to be let to graziers, as WEDDERGETTERs ; but for that of getting rams, to be let out again, to inferior tupmen, as RAMGETTERs.

The *graziers'* prices run, even now, from one to ten guineas. I have not heard of more than ten guineas being given by a *mere* grazier for a ram, for the *sole* purpose of getting grazing stock : five or six guineas is the common price.

Supposing he give the highest price, ten guineas, and that the ram serves a hundred ewes, or even gets a hundred lambs (some single some double), the cost of getting amounts to no more than two shillings ahead ; which is inconsiderable, compared with the difference between a well and an ill grazing sheep : between a sheep that will get as fat at two years old, as another will at three : or, in other words, which will, at two years and a half old, fetch ten or fifteen shillings more than

than his comrades, of another breed, but of the same natural size, and going in the same pasture \*.

The *middle prices*,—as those from twenty to fifty guineas,—are, *under present circumstances*, equally reconcileable to common sense. If a breeder, who gives fifty guineas, rear ten tolerable rams, fit for the grazier's use, and let them at five guineas each, he brings himself home, even the first season of letting; beside having the rams for another and another season; and beside a general improvement of his stock.

Those who give the *higher prices*,—as one to two hundred guineas,—have, or ought to have, proper bases to build upon—sufficient stocks of well bred ewes: in which case, they have a fair chance of producing ramgetters, worth—while the present spirit of improvement lasts—twenty to fifty guineas a season †.

With

\* See MIN. 30.

† There are instances, though they are not very common, of the more valuable rams being kept, as stallions; the owners taking in ewes to be served by them. The *price by the ewes*, ten to sixty guineas a score.

It is likewise in practice, especially on letting the more valuable rams, for the letter to reserve a stipulated number of ewes to himself; either using the ram before he be sent out, or sending the ewes to the hirer's grounds.

With respect to the *very high prices*, they are given by a few first-rate breeders, who are playing a high game—running a hard race—for the pride and profit of being leader, when Mr. Bakewell *is not*. A contention which may last as long as Mr. Bakewell; and be, at once, an honor to his genius, and a reward of his services.

#### TREATMENT OF RAMS AFTER LETTING.

The breeders of rams, as well as of bulls, find it expedient to reduce them, from the cumbersome state in which they are shown, previous to the season of business; the old rams, in particular, being frequently returned upon their hands nonefficient. Hence, as they are let, they are transferred to *private* pastures, and moderate keep; it being a pretty general rule not to *show* a ram after he is *let*.

SENDING OUT LET RAMS. The usual *time* of beginning to send out is the middle of September. The *means* of conveyance, carriages of two wheels, with springs, or hung in slings; some of them being large enough to hold four rams. In these they travel from twenty to thirty miles a day: being sent in this way, sometimes, two or three hundred miles.

The

THE METHOD OF USING these rams has lately received a very great improvement.

Instead of turning the ram loose among the ewes, at large, as heretofore, and agreeably to the universal practice of the island,—he is kept apart, in a separate paddock or small inclosure, with a couple of ewes only, to make him rest quietly ; having the ewes of the flock brought to him singly ; and serving each no more than once.

By this judicious and accurate regulation, a ram is enabled to serve near twice the number of ewes he would do, if turned loose among them ; especially a young ram.

In the old practice, sixty or eighty ewes were esteemed the full number for a ram : in the new, from a hundred to a hundred and twenty are allowed : seven score have been served by one ram, in a season.

THE EXPECTED TREATMENT OF A RAM AT RIDE, is merely that of keeping him well, and free from disorders, suffering him to serve no other than the hirer's own ewes, and of these the limited number only, and to return him safe when he has done ; generally, the beginning of December ; or, if the hirer has met him on the road (which is customary),  
the

the latter, in return, meets him on his journey home.

The AFTER-TREATMENT consists in striving, by every devisable means, to reload his carcase, and thereby make him look, as fat and handsome as may be, at the ensuing show.

EWES. The *size of breeding flocks*, viewing the district at large, is various. Some GRAZERS, namely, men who breed for their own grazing, will keep five or six hundred ewes. But the ewe flocks of the RAMBREEDERS of the modern breed (of which, only, I shall speak) run generally from one to two hundred.

In the MANAGEMENT of these flocks, there is no mystery, I believe; nor have I met with any thing extraordinary in it, or strikingly different from that of other breeding flocks. The management of ewe flocks, however, being a subject which has not yet entered fully into this register, it will be introduced with singular propriety, in this place.

The subject divides, analytically, into

The choice of ewes.

Their summer treatment.

The time of admitting the ram.

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Their

Their winter treatment.

Their attendance at lambing time.

Their treatment after lambing.

Weaning the lambs.

Treatment of ewe lambs.

Culling the ewes.

In the CHOICE OF EWES, the breeder is led by the same criterions, as in the choice of rams. *Breed* is the first object of consideration. Excellency, in any species or variety of live-stock, cannot be attained with any degree of *certainty*, let the male be ever so excellent, unless the females employed, likewise inherit a large proportion of the genuine blood; be the species or variety what it may. Hence no prudent man ventures to give the higher prices for the Dishley rams, unless his ewes are deeply tinged with the Dishley blood.

Next to breed is *flesh, fat, form, and wool*.

With ewes possessed of these qualities, in any tolerable degree, and with a ram of the same description, good WEDDERGETTERS, at least, may be bred, with a degree of certainty: and with those, in a higher degree, accompanied with a superior degree of neatness, cleanness, fineness, and with a ram of this



this description, RAMGETTERS may be reasonably expected.

SUMMER TREATMENT OF EWES. After the lambs are weaned, the ewes are kept in common feeding pieces, at moderate keep; without any alteration of pasture, previous to their taking the ram. If, however, double lambs be desired, a flush of keep, at that time, might be eligible. See YORK. ECON. v. ii. p. 223.

The usual TIME OF ADMITTING THE RAM is, as has been intimated, about new Michaelmas; sooner or later, according to circumstances.

The WINTER TREATMENT consists in keeping them well, on grass, hay, turneps, and cabbages: no difference, I understand, being made in their keep, previous to the time of lambing. But see YORK. ECON. as above\*.

With respect to ATTENTION AT LAMBING TIME, it may be taken for granted, that, where the loss of a single lamb may, possibly, incur

F f 2

the

\* The alterations of keep, that are here intimated, may, however, be less requisite, in the management of the flocks, now more immediately under notice, which are always at what may be called high keep, than in that of more ordinary and lower kept flocks.

the loss of a thousand guineas, no attendance or attention is spared.

The ewes of the modern breed, however, lamb with less difficulty, I understand, than those of most other breeds of longwooled sheep\*; the heads of the modern breed being much finer. Their shoulders, I understand, are the most common cause of obstruction.

TREATMENT AFTER LAMBING. From the time of lambing, to the time of weaning the lambs, the ewes are treated with every indulgence of keep: not more on account of a general desire to push the lambs forward, than on that of the ewes of this breed being, generally, bad nurses;—deficient in milk.

As the modern breed of Midland cattle “run to beef”—its modern breed of sheep “run to mutton;” and from the same cause: a natural propensity, of extraordinary strength, to a state of fatness. I saw a ewe in the flock of a principal breeder, which, though she had reared two lambs, was, in the beginning of August, in a high state of fatness. The fact was, that, at weaning time, the latter end of July, this ewe was entirely dry, and  
low

\* See NORF. ECON. MIN. 76.

how long she had been so, was not then to be ascertained.

This property of the modern breed is not held out as a charge against them: it is, on the contrary, a circumstance that appears, to my mind, much in their favor. The use of the milk of ewes (in England at least) is merely that of rearing their lambs; and is not, like that of cows, extended to the dairy. If a ewe can keep her lamb on milk, until it can keep itself on herbage, she has, to a store lamb at least, done her duty. More than will effect this is superfluous, and sometimes inconvenient or dangerous; and is, no doubt, a check to her thriving.

WEANING. The *time* of weaning is the latter end of July, or the beginning of August.

Previous to the separation, the lambs are, or ought to be, *identified*, by ear-marking, or otherwise\*; to guard against accidents, and the imperfections of the memory.

It is true, an experienced and attentive shepherd requires no other distinguishment,

F f 3 than

\* For the fire, the ear is generally marked: for the dam, ochre, or pitch is used; marking the ewe and her lamb, previously to the weaning, in the same part, or with the same number, or letter.

than their natural forms and countenances; which, from a continued attendance, become as familiar to him, as the persons and faces of his neighbours. There are shepherds, not in this district only but in others, who are able to couple the ewes and lambs of their respective flocks; drawing them from two separate pens, one containing the ewes, the other the lambs; scarcely mistaking a single countenance. But the overseer of a plantation knows every negro upon it, though they are in a manner naked; and an officer, every foldier of his regiment, though their dresses are exactly the same.

**TREATMENT OF THE EWE LAMBS.** The female lambs, on being weaned, are put to good keep, but have not such high indulgence shewn them as the males: the prevailing practice being to keep them from the ram, the first autumn.

**CULLING THE EWES.** At weaning time, or previously to the admission of the ram, the ewes are culled, to make room for the "thaves," or shearlings, whose superior blood and fashion entitle them to a place in the breeding flock.

In the work of culling, the **RAMBREEDER** and the mere **GRAZIER** go by somewhat different

ferent guides. The grazier's guide is principally *age*; seldom giving his ewes the ram after they are four shear. The rambreeder, on the contrary, goes chiefly by *merit*: a ewe that has brought him a good ram or two, is continued in the flock, so long as she will breed: there are instances of ewes having been prolific to the tenth or twelfth year; but, in general, the ewes of this breed go off at six or seven shear.

In the practice of some of the principal rambreeders, the "culling ewes" are never suffered to go out of their hands, until after they are slaughtered: the breeders not only fatten them, but having them butchered, on their premises.

There are others, however, who sell them; and, sometimes, at extraordinary prices. Three, four, and even so high as ten, guineas each have been given for these outcasts.

There are in the flocks of several breeders, ewes that would fetch, at auction, twenty guineas each. Mr. Bakewell is in possession of ewes, which, if they were now put up to be sold to the best bidder, would, it is estimated, fetch no less than fifty each; and, perhaps,

F f 4                      through

through the present spirit of contention, much higher prices.

It is now, I understand, in agitation TO LET EWES BY THE SEASON, in the manner rams are let.

Where this spirit of breeding will end, or what will be its effects, time only can determine.

**GRAZING.** The fattening of sheep is a subject new to this work. The outline of the practice may, therefore, be sketched, with singular propriety, in this place; immense numbers being fattened, every year, in the Midland District.

The subject divides into the following branches :

Situation and soil.

Materials of fattening.

Description of sheep.

Mode of obtaining them.

Management during possession.

Markets.

Produce.

**SITUATION.** The MIDLAND DISTRICT has been described as a well soiled middleland tract; chiefly in a state of grass; but with an inter-

intermixture of arable land; especially in the DISTRICT of the STATION.

But the more GRAZING part of the district, namely, South and East LEICESTERSHIRE, with the ADJOINING MARGINS of Rutlandshire, Northamptonshire, and Warwickshire, consist chiefly of large grass feeding pieces, which are most of them stocked with a large proportion of sheep.

The MATERIALS OF FATTING are principally *grass* and *hay*; with some few *turneps* and *cabbages*; but, even in the District of the Station, the two latter can scarcely be said to enter into the ordinary practice of the country.

The DESCRIPTION OF SHEEP varies with the system of management: in the DISTRICT of the STATION, the prevailing stock is *culling ewes*, partly of the *longwooled*, and in part of the *shortwooled* breed, as has been already mentioned at the head of this article.

But, in the more GRAZING parts of the district, the *longwooled* breed, and mostly *two-shear wedders*, with a proportion of *culling ewes*, are almost the only description of fatting sheep.

The MODES OF OBTAINING these several sorts of sheep are various. The “graziers”  
many

many of them *rear* a considerable part of their stock ; others *purchase* wedder lambs of the breeders who do not “graze.” On the contrary, the arable “farmers” most of them *purchase* ; excepting some leading men, who, having adopted the modern breed, *rear* their own stock of grazing sheep.

*The places of purchase* of the shortwooled ewes have been mentioned to be, principally, the fairs of Shropshire and Staffordshire : Dudley is the most noted place for these sheep. The longwooled ewes which are fattened in *this* district, are purchased at the autumnal fairs of the neighbourhood ; but more particularly at the market of Tamworth ; to which, in autumn, they are brought weekly ; some out of Gloucestershire ; but mostly out of Leicestershire, and chiefly by one dealer ; who brings some thousand sheep every year into the district.

It is observable that, in the lots of these two descriptions of sheep, individuals of all sizes and all ages, from a thave to a crone, are intermixed ; no other separation being made, than that of keeping the two sorts distinct. This circumstance, however, disgusting as it may be to a stranger, who has been used to see  
sheep



sheep sorted agreeably to their ages, is the cause of less inconveniency, as they are all of them equally intended to be fatted, the ensuing summer.

In the *choice* of grazing sheep, graziers differ, and in the most essential points. While one man is purchasing a lot for their neatness and cleanness from offal, another buys a pen of "rare strong boney sheep;" of which description the markets of long-wooled sheep principally consist.

THE MANAGEMENT OF FATTING SHEEP. The *ewes* have the *ram* about Michaelmas, or later: some before, some after they are purchased. Grass being the only dependence, here, for ewes and lambs, it is thought bad management to bring the lambs too early in the spring.

The *keep* varies with the stock. The wethers, the first year, while shearlings, and the ewes the first winter, are kept as store stock\*; but

\* Little or no FOLDING is done in the Midland District: I do not recollect seeing one instance; except in a light sandy field (Queniborough's) between Leicester and Melton. In this case the hurdles were set leaning outward, and propped with forked props, as in Gloucestershire: not set upright, in the ground, as in most districts.

but the ewes from the time of lambing, and the wedders the second summer, are of course at head keep; the prime wedders reaching market about September. The culling ewes are seldom ready until the ensuing spring.

The method of *stocking* has been mentioned to be, that of mixing them with fattening cattle, or dairy cows, in the proportion of two to one: and, taking the district at large, this may be the nearest proportion; but, in some of its more grazing parts, I have observed large tracts of ground appearing to be stocked chiefly with sheep; the proportion of cattle being small\*.

The only circumstance that requires particular notice, in the *management of ewes and lambs*, is that of the lambs being, sometimes, taken from the ewes, before they are fit for the butcher; and fattened, without the ewes, at clover or other high keep! a novel practice in grazing.

The leading principle, at least, is good. The ewes, of course, come sooner to market, than they would if the lambs remained with them

\* These, however, are, I believe, chiefly store sheep on the most ordinary land, too weak for grazing bullocks.

them a longer time : and those who practise this method say, that after the first flush of milk is gone, the lambs thrive better on grass alone, away from the ewes, than they would if kept with them ; by reason of their hanging after a little milk, in this case, which prevents their feeding freely on herbage.

I register this, not as the prevailing practice of the district, but as that of some intelligent judicious managers, who would not follow it, if they, themselves, were not convinced of its eligibility \*.

In

\* **FATTING LAMBS ON GRASS.** The keep of the lambs, in this case, ought certainly to be extraordinary ; as raygrafs and white clover, early ; and red clover in head, later in the summer.

An improvement of this method is evident. Ewes vary, exceedingly, in the time of losing their milk ; and to take away those lambs, whose dams are yet in full milk, is selfevidently wrong ; as removing those, whose dams are deficient in milk, from the ordinary pasture of the ewes, to higher keep, is more than probably right. Hence, examining the ewes, from time to time, and removing the lambs from such as are found deficient, appears evidently, to be the line of right management.

Rambreeders, at least, might, it is more than probable, profit by such a practice. Many of the ram lambs, at weaning time, appear in very low condition.

In the *shepherding* of sheep, in this country, a few circumstances may be mentioned with propriety.

Trimming the buttocks in the spring—provincially “*belting*” in this district, and “*dagging*” in the grazing country—is well attended to ; and the produce turned to profit. There are graziers, keeping perhaps some thousand sheep of different descriptions, who will make up a pack or two of “daglocks” yearly ! The locks are washed, spread on the ground to dry, and packed up like fleece wool : a *new* species of marketable produce ; used, I understand, chiefly in the carpet manufactories.

As a *preventive of the fly*, the Midland shepherds use various applications, especially to the lambs. Trainoil is found to be efficacious ; but it fouls the wool, and makes the sheep disagreeable to touch. An ointment made of butter and the flowers of sulphur seems to be in the best repute\*.

#### Insects

\* The butter being melted, a sufficiency of brimstone is stirred into it, to form an ointment of a pretty firm consistency. In application, a piece the size of a small walnut is rubbed between the hands, and these drawn along the backs of the sheep.

There

Insects certainly have their antipathies, and to find out those of the sheep fly is an interesting subject of enquiry.

The method of *destroying maggots*, here, is effectual, and, if applied in time, simple and easy. Instead of cutting the wool off the part affected, and scraping off the maggots, with the points of the shears, the wool is parted, and the maggots picked out with a knife, or otherwise dislodged, without breaking the coat; and a small quantity of white lead scraped, from a lump, among the wool; which being agitated, the powder is carried evenly down, to the wound. Too much discolours the wool; a little prevents any farther harm from the maggots, that may be left among the wool; driving them away from the wound; and, at the same time, is found to promote its healing. In well shepherded flocks, which are seen regularly twice a day, there is no such thing as a broken coat.

Artificial *wash pools* are here common. In some countries, sheep are driven, perhaps two  
or

There are some nostrums, in the shops, sold for this purpose; but those whose effects I have had an opportunity of observing, discolour the wool.

or three miles, to the wash pool : a practice which is not only inconvenient to the shepherd, but dangerous to the sheep. Here, the smallest rill is rendered subservient to the purpose of washing sheep. In a convenient part, a wall is built across the rivulet, with an opening in the middle, to let the water pass, in ordinary ; and with a small floodgate fixed in the opening, to stop it occasionally. On one side is the pen, and on the other side a paved path, for the sheep to walk up, out of the pool.

With respect to *shearing*, I have met with nothing noticeable ; except the extreme neatness with which the sheep of this district are sometimes shorn ; especially the show rams.

MARKETS. The markets for *carcases* have been mentioned : *London*, for the wedders, &c. fatted in the southwestern quarter : *Birmingham*, &c. for the ewes and lambs fatted in the district of the station.

The markets for *wool* are various. Heretofore, most of it has been bought up by wool-staplers, living in different parts of the district. Some of it is sorted, and, what is not wanted for

for the manufactures of the district (namely, hosiery in Leicestershire, and coarse worsteds in Northamptonshire) is sent to the distant manufactories for which it is suitable.

But, of late years, the manufacturers, themselves, from Yorkshire and other districts, have bought up some share of the wool, immediately of the growers.

The *price* of "pasture wool," namely, of the wool of the longwooled sheep of this country, has been, during the last seven years, sixteen to twenty shillings a tod, of twentyeight pounds. The price this year (1789) rose from seventeen to nineteen shillings;—with scarcely any distinction as to quality! though, to the sorter or the manufacturer, it may vary several shillings a tod. But the "breaking" of wool is a mystery, which lies not within the province of the grazier.

PRODUCE. The wedders, in eighteen or twenty months, are expected to pay, on a par of years, ten to twelve shillings a head, in *carcase*, besides two coats of *wool*, worth

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five

five or six shillings each; together, twenty to twentyfive shillings; or about fourpence ahead a week\*.

The ewes and lambs, of the longwooled breed, pay more. Suppose the improvement of the ewe five or six shillings, and the produce of the lamb as much, with the fleece of the ewe three or four shillings, together twenty shillings; for twelve or fourteen months keep of the ewes, and two or three months of the lambs.

• The shortwools are allowed to pay still better, but they are wilder and more mischievous; and are chiefly in the hands of the smaller farmers.—The Shropshire wool, however, though fine, is very light; the ewes seldom yielding more than one to two pounds each fleece; worth, perhaps, from a shilling

\* On the calculation of this country, where four sheep are, as grazing stock, esteemed equal to one cattle, this appears to be a low produce. If, however, we estimate the first nine or ten months at threepence, and calculate on the proportion of six to one, the produce of the last six or eight months will be equivalent to that of a bullock at two and sixpence a week.



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a shilling to eighteen pence a pound; or about two shillings a fleece.

REFERENCES TO MINUTES ON SHEEP.

For an instance of the different *qualities* of sheep arising from *breed*, 30.

For a striking *accidental variety* of sheep, 60.

For observations on the *fattening* of *young* sheep, 105.

37.

'S W I N E.

THE NUMBER of swine kept, in this district, is above par. The farms, of some of the more modern farmers, are mere hog warrens. But in what may be called the established practice of the district, the number kept is few; but the size extraordinarily large; thirty to forty stones (of 14 lb.).

With respect to the PROPORTION OF SWINE to cows, I found, in the practice of one su-

perior manager, only eight hogs to twenty cows, though no calves were reared. And, in that of another, in which calves are reared, only four or five to twenty cows. (See GLO. ECON. v. i. p. 317.)

The SPECIES of swine, in this district, are various. The large black-and-white *Berkshire* breed is the favourite, among the orthodox of this district. But in the yards of more fashionable farmers, the "tonkey," or half bred *Chinese*, are more commonly seen\*.

Of swine, as of every other species of stock, Mr. BAKEWELL possesses a superior breed; a mixbreed sort; which I mention the rather, as it furnishes the only instance, I have met with, of this species of stock being improved by *breeding inandin*; a practice which, though it is admitted as applicable to the three superior species of livestock, is considered by intelligent men, even of this district, as inimical to the species under notice.

One

\* There is, in this district, a very extraordinary variety of the black breed of hogs: a "whole-footed sort." The hoof being entire, like that of the ass, not cloven, as that of hogs in general.

One superior breeder *believes* he pursued the practice, until all his pigs became “ricketty;” another until they were all “fools!” and even Mr. Bakewell had a want of success at the outset of improvement. He persevered, however. He continued to send his sows, year after year, to the same celebrated boar (belonging to a gentleman in his neighbourhood), which boar is the father of the *entire* family: his daughters, and his daughters’ daughters, having been regularly sent to him! The consequence is, the breed, so far from being worn out or weakened, has been highly improved, by this incestuous intercourse,

The LETTING of MALE SWINE has not, I believe, yet been introduced into practice. But the price of the leap is properly raised with the quality of the boar; as from one to five shillings a sow,

In the MANAGEMENT of STORE SWINE, I met with only one idea that requires registering: namely, that of *oats*, being, in the opinion of professional men, preferable to *barley*, as a food, not of young pigs only, but of breeding sows.

G g 3

Another

Another opinion, however, may be mentioned: namely, that young pigs require *warm* meat to make them *grow*. Corn and cold water will make them sleek and healthy; but warm beverage is considered as requisite to a quick growth. This, however, is registered as matter of *opinion*.

The FOOD of FATTING SWINE is chiefly *barley meal*. Sometimes *potatoes* are mixed with it. Few *beans* or *peas* are now used in fattening swine.

In the MANAGEMENT of FATTING SWINE, I met in this district with a minutia of practice, which well deserves a place in this register: namely, that of keeping two or three little store pigs, in the fattening sty; for a purpose which theory would not readily suggest.

While the fattening hogs are taking their repast, the little ones wait behind them; and as soon as their betters are served, lick out the troughs!

Beside the advantage of having, by this expedient, no waste nor foul troughs, there is another. The large pigs rise alertly to their food, lest the small ones should forestall them; and fill themselves the fuller, knowing that they have it not again to go to!

The

The disadvantage of this practice is, I understand, the large ones are apt to lord it, too much, over the little ones; especially in a confined sty. If, however, they had a separate apartment assigned them, with an entrance too small for the fatting swine to follow them, this disadvantage would be in a great measure remedied.

In this district\*, I saw a FATTING STY, in a most admirable situation: by the brink of a stream; which runs, on the dog kennel plan, through the yard of the sty.

The sty is a separate building, substantial and commodious; the entire site shelving, from the gangway behind the troughs, down to the brook; in which the hogs, in warm weather, delight to bathe themselves: cleanliness is a necessary consequence. A disadvantage is that of some part of the fullage being carried away by the stream†.

#### G g 4 GENERAL

\* At FISHERWICK, the seat of the EARL OF DONEGAL.

† In a situation, however, like this, where the stream empties into *fish pools*, no eventual loss may ensue.

## 38.

## GENERAL OBSERVATIONS

ON THE

I M P R O V E M E N T

O F

L I V E S T O C K .

VIEWING THE LIVESTOCK of the kingdom at large, every species, and almost every breed, is capable of very great improvement.

Except what has been done in this district, with respect to cart horses, longhorned cattle, and longwooled sheep; in Yorkshire, with respect to cattle and sheep; and in Lincolnshire,

shire, with respect to sheep and horses; the stock of the island may be said to lie in a state of neglect, and to call loudly for improvement.

Therefore, to attempt, while in the grand scene of improvement, and while the subject is fresh in the memory, to ascertain the most suitable MEANS, and to enumerate the more evident EFFECTS, cannot be foreign to the present undertaking.

In a STATE OF CULTIVATION, the produce of a given country is applied, as much as may be, to the uses or abuses of the human species *possessing* that country. The three kingdoms of nature, so far as they are controulable by human art, are rendered subservient to the species. The native animals and vegetables, not conducive to human purposes, are extirpated (or ought to be), as far as in their nature and human industry they are capable of being extirpated, and such, whether native or exotic, as are adapted to the various purposes of mankind, are propagated.

In the choice of these productions, there are general rules observable: they ought to be adapted to the CLIMATE and SOIL, to the STATE OF SOCIETY, and to the established

blished CUSTOMS and MANNERS of the given country.

In this island, it is customary to eat both vegetable and animal food, to go clothed, to ride on horseback and in carriages, and to carry on husbandry, manufactures, trade, and commerce.

The species of ANIMALS propagated, at present, in this country, for the purpose of furnishing the requisite animal productions, are principally four :

Horses,  
Cattle,  
Sheep,  
Swine.

The purposes for which these four species of domestic animals are severally propagated, in this country, are these :

HORSES for the saddle, for carriages, and for other purposes of draft, in manufactures and trade ; and, at present, in the works of husbandry,

CATTLE for draft ; and for animal food, as beef, and dairy produce.

SHEEP for a material of clothing and manufacture ; and for animal food ; as well as for meliorating the soil, in a manner which,  
*perhaps,*



*perhaps*, no other domestic animal, of this country, is capable of effecting \*.

SWINE (with rabbits, poultry, &c.), for the purpose of food only.

The SPECIES of livestock, and the PURPOSES for which they are propagated, being ascertained, it will be proper to examine, next, the MEANS OF IMPROVEMENT.

One GENERAL PRINCIPLE of IMPROVEMENT, common to the four species, is evident.

The island being limited in extent, the quantity of vegetable produce, in the present state of cultivation, is given; and the greater quantity of *profitable* animals the superfluous part of this produce, after the appetites of the present inhabitants are sufficed with vegetable food, can be made to support, and fit for their  
several

\* It is unnecessary to say that MANURE, though collected in different ways, is a produce common to the four species: its quality, *perhaps*, depending *more* on the food consumed, than on the *species* of animal through which it passes: nevertheless, it is probable, *something* depends on the animal. The effects of the viscera of different animals, on the vegetable substances which pass through them, is a subject on which the chemical art might be well employed; but which, probably, will never be profitably investigated, without the aid of a PUBLIC INSTITUTION.

several purposes, the more plentiful these animals will become : consequently, the greater number of inhabitants may be supplied, at home ; or the better opportunity will be afforded of furnishing our neighbours, either with animal or vegetable productions, as their wants may require.

To come at the MINUTIÆ OF IMPROVEMENT, it will be proper to examine each species separately.

The HORSE being refused as an article of human food (of European customs the second in absurdity), his perfection consists, solely, in *strength* and *activity* ; with such a constitution as will enable him, agreeably to the general principle, to support his strength and activity, with the smallest expenditure, possible, of vegetable food.

Fashion, indeed, requires *beauty of form* ; and even the *utility of form* varies with the particular purpose for which he is intended. For though a hunter and a dray horse both of them require strength and activity ; yet they require them in different proportions, and, perhaps, in different parts.

Hence, in this species of animal, the utility of form depends, minutially, on the intention :

tion: strength and activity, with a good constitution, being the essential properties.

SWINE being useful merely as an article of food, their perfection consists in the smallness of ossal; in the goodness of flesh; in the quality of fattening, early and quickly; on their affecting herbage, especially such species as other domestic animals refuse\*; and in having such a constitution as enables them to convert the vegetable produce, they consume, to the best advantage.

SHEEP. The grand purpose of sheep, viewed in this general light, is evidently that of producing a material of clothing, and an article of commerce, which no other species of animal can supply.

It has been shewn above, that, in the present state of society and commerce in Britain, wools of various degrees of length and fineness are requisite; and that they require various soils and situations, and various breeds of sheep, to produce them.

Thus,

\* I speak of swine, as a species of livestock in husbandry, merely; and leave it to those, whom it may concern, to make a proper choice of them, for the purposes of manufactures in which green herbage makes no part of their sustenance.

Thus, long wool, fit for the Norwich manufactures, could not, I believe, be grown on the Ryelands of Herefordshire ; nor fine wool, fit for the Wiltshire cloths, on the marshes of Lincolnshire. It is still more evident, that wool a foot long, could not be grown on the Ryeland breed of sheep, though they were pastured on the marshes of Lincolnshire ; nor wool an inch long, on the Lincolnshire breed, though they were kept on the Ryeland hills \*.

The fact appears to be, something depends on *climature* and *soil*, much on *breed*; for although the various breeds of sheep, now in propagation, may be, in nature, *the same species*; being what naturalists term *varieties* †,—produced

\* I wish to have it understood, that, by the RYELAND HILLS (which are by no means well determined) I mean a *light, dry, warm, upland* soil and situation.

† I confess, however, that I am here speaking the language of NATURALISTS, rather than the dictates of my own experience : indeed, whether, in the ANIMAL kingdom, VARIETIES are altogether *accidental* or *artificial*, or whether there are not, or have been originally, *natural subdivisions* of SPECIES, would, with respect to DOMESTICATED ANIMALS, be now difficult to determine, and is not essential to the present discussion.

duced by climature, foil, accident, and art, under the guidance of reason or fashion, during a succession of centuries; and although the three first might, in a length of time, make a material *alteration* in the various sorts; yet they never could, by the general law of *accident*, be able to *complete the reversion* of the two sorts abovementioned. Even with the assistance of *art* it might take some centuries to accomplish it.

Hence, to attempt any material *change*, in the present breeds of sheep, would be imprudence in the extreme.

We have, at present, through time and the industry of our ancestors, various breeds; some of them adapted, though not perfectly, yet in a very considerable degree, to the soils they are upon, and the purposes for which they are wanted: and all we have to do is, to select such of them as are more particularly adapted to the purposes required, and to the several soils and climatures of this island; and, having done this, to endeavour to COMPLETE THE IMPROVEMENT of these select breeds: the general distinguishments of which have been already given.

In

IN PRACTICE, the leading principle, on which every individual ought to conduct his improvement of this species of livestock is, evidently, that of adapting his *breed* to his *climature, soil, and system of management*.

His first business is to gain a general knowledge of the several superior breeds of the island, and the next to examine whether, or not, the established stock of the country, he is fixed in, is best adapted to his purpose: if not, and a decided preference appear in favour of some other breed, he has no more to do than to introduce it.

But if, on mature examination, he find, as he most probably will, that the established breed of the country is, in its general nature, most suitable to his end, his next business is to obtain a general knowledge of the superior flocks it contains, and from these to select the superior individuals: so far, I mean, as he can select them fairly and prudently.

The first step is to select FEMALES; and, in doing this, to be more anxious about the *quality*, than the *number*.

The selection of females being effected, their IMPERFECTIONS are to be ascertained:  
and

and this effected, the next step is to procure, if possible, wherever he may be found, the MALE best qualified to correct these imperfections; and, in the choice of him, to pay more regard to his parentage, and the stock he has got, than to any other qualification.

The foundation being thus laid, the means of carrying up the superstructure are evidently those of breeding inandin, and selecting, with judgement, the superior individuals produced; having ever in view the idea of perfection.

The PERFECTION of sheep, therefore, becomes a fit subject of discussion. It varies, of course, with the breed to be improved.

With respect to *wool*, it consists in its being adapted, not to the given SOIL, and system of MANAGEMENT, only; but, *perhaps*, to the given CLIMATURE: otherwise, if we may reason from analogy, the improver appears to be setting himself against nature; a powerful opponent.

The coats of furred animals, in general, are fuller in winter than in summer; and the coat of a horse, kept abroad during winter, is *thicker*, and appears *longer*, than that of the same horse would be, if kept in a warm stable,

during the same season. But whether the coats of sheep are influenced by the same law of nature, as those of other furred animals, may not yet be determined ; but probably remains an important subject of investigation.

With respect to *carcase*, the perfection of sheep has been already intimated. It varies with the INTENTION ; as whether it be food merely, on a genial soil, or melioration of the soil, as well as food ; or food solely, in an inclement situation. But, for these different purposes, some difference in stature and disposition is the only requisite difference of carcase.

In every situation, a *lightness of offal*, a *firmness of flesh*, a *strength of constitution*, and a *usefulness of form*, are requisite.

The last, the UTILITY OF FORM, is the only one which requires to be noticed in this place.

The prevailing imperfection of the form of sheep, in the kingdom at large, is a deficiency of the fore quarters : a part which, in the modern breed of this district, is, in the light of positive utility of form, evidently overloaded : but, considering this breed as capable of correcting the other breeds of long-wooled sheep in that part, its individuals may  
be



be said to be at present of a most useful mold. Whenever they have accomplished the requisite reform, it will, I am clearly of opinion, be right to lower the size of their fore quarters.

The most useful form of a sheep, for the SHAMBLES, appears to me to be this: the ends equal, with a middle so proportioned to them, that, when the sheep is in full flesh, the entire carcase may take, as nearly as the nature of a quadruped will allow, the cylinder form: with a property of laying on its fat as evenly over its back and sides as the nature of its frame will admit; taking, when in a state of fatness, the oval form: with a low short forend, growing out of the center of the carcase; the neck and head, with the nose shooting forward, forming a cone: a form, which, in my mind, is not only the most *useful*, but the most *beautiful*, a sheep can take.

The most likely means of PROMULGATING a superior breed of sheep, and of promoting their adoption, appears to me, evidently, to be that of DISPERSING THE WEDDERS: sending them, while young, into the districts for which the breed is calculated: shewing them

H h 2 publicly,

publicly, there, in open market : putting them to grazing, in the neighbourhood of the place of showing ; and, when moderately fat, showing them, again, in the same market : having them slaughtered, in the place ; and showing their carcases, on the shambles, the next market day : not so fat as to turn men's stomachs, but fat enough to stimulate their appetites, and shew them how soon the flesh is brought to so desirable a state : sending joints to the leading men of the district ; to let them judge of it when dressed : doing all this, not as with an intent of convincing men by force ; but, merely, by way of giving them an opportunity of convincing themselves.

If a breed of sheep will not bear this test ; coolly and firmly tried, and repeated ; they are not, probably, fit to be propagated.

CATTLE. On all soils, and in every situation, mountains and fens excepted ; cattle are requisite in their three capacities of

Dairy stock,

Beasts of draft, and

Grazing stock.

It may, however, be proper, before I proceed farther, to produce some evidence that

*they*

*they are*, in the present state of agriculture and population, and under the present customs of this country, *requisite*, as BEASTS OF DRAFT IN HUSBANDRY.

That they are not, under present circumstances, *necessary*, in this capacity, at least not in any great degree, is pretty evident in the smallness of the number worked at present, compared with the number of horses now in use for that purpose. It is probable that, in England, not more than one sixth of the work of husbandry is, at present, done by cattle \*.

But great and interesting as the subject of beasts of draft in husbandry undoubtedly is, it would be improper to enter largely into it, in this place. I have already touched upon it, repeatedly; and may, hereafter, have occasion to enter fully into its discussion: therefore, all I shall offer, at present, will be a statement of the COMPARATIVE EFFECTS of horses and cattle, as beasts of draft in husbandry.

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\* This estimate must be received as, in great measure, conjectural. It would be difficult to adduce data sufficient for an accurate estimate.

This kingdom contains (near enough, at least, for our present purpose) thirty thousand square miles of CULTIVATED SURFACE.

Supposing the works of husbandry to be carried on solely by HORSES ; and supposing twenty horses to be employed on each square mile (or about three to a hundred acres), the number of horses, employed in husbandry, would be six hundred thousand : from which deduct one sixth for the proportion of cattle worked at present, there are, on this statement, five hundred thousand horses now employed in agriculture.

Admitting that each horse *works* ten years, the number of farm horses which die annually, in this kingdom alone, is fifty thousand : each of which requires four years keep before he be fit for full work\* : for which consumption of vegetable produce he returns not to the community a single article of

\* It is true, that horses are *broke in* at three, some at two years old ; but they are, or ought to be, *indulged*, in keep and work, until they be six : so that the cost of rearing, and fitting for full work, may be safely laid at four years ordinary keep.

of food, clothing, or commerce \*. Hence it is evident, that, by the practice of working horses in husbandry, the community is losing, annually, the amount of two hundred thousand years keep of a growing horse; which, at the low estimate of five pounds a year, amount to a million of money annually.

On the contrary, supposing the business of husbandry to be done solely by CATTLE; and admitting that oxen may be fatted with the same expenditure of vegetable produce, as that which *old* horses require to fit them for full work; and that, instead of fifty thousand horses dying, fifty thousand oxen, of no more than fiftytwo stone each, were slaughtered, annually; it is evident, that a quantity of beef, nearly equal to that which the metropolis now consumes, would be, annually, thrown into the market; or, in other words, a hundred thousand additional inhabitants might be supplied with one pound of animal food a day each; and this without consuming one additional blade of grass.

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\* Even his skin, for economical purposes, is barely worth the trouble of taking off.

I am far from expecting that cattle will, in a short space of time, become the universal beasts of draft in husbandry ; nor will I contend, that under the present circumstances of the island, they *ought*, in strict propriety, to become such : there *may be* some few situations in which horses ought, in propriety, to be used. But *I know* that cattle, under proper management, and kept to a proper age, are equal to every work of husbandry, in most, if not all, situations. And I am *certain* that a much greater proportion, than there is at present, might be worked with considerable advantage, not to the community only, but to the owners and occupiers of lands.

If only one of the fifty thousand carcases, now lost annually to the community, could be reclaimed, the saving would be an object.

Impressed with these ideas, I return to the general subject.

On all soils, and in every situation, MILK is a necessary of life.

On all soils, and in every situation, BEEF is an article of human food,

On all soils, and in every situation, fens and mountains excepted, BEASTS OF DRAFT are necessary.

In every *culturable* situation, the three are requisite: and they are the *principal* requisites of cattle, in every situation\*.

Hence, the requisite qualifications of CATTLE are the same, in every *culturable* situation,

These qualifications form an interesting subject of enquiry.

DRAFT requires a cleanness of limb; a depth of carcase; a thriving constitution; and a head unencumbered with horns†.

#### MILK

\* MANURE, LEATHER, and TALLOW, are the inseparable productions of cattle. The quality of the first may depend, as has been intimated, on the quality of the food consumed. But the quality of the second, a necessary of life, and the quantity of the last, one of its greatest conveniences, depend altogether on breed; and, certainly, ought not to be lost sight of, in the improving of cattle.

† In the ruder stages of society, HORN ranked among its first conveniences: at present, it is little in use; even the postman has, at length, found a substitute in *tin*.

MILK the same: carcase is requisite; and horns not only useless, but dangerous\*.

BEEF the same; except a depth of carcase; and whether, in the present state of society in this country, a lightness of fore quarters is, or is not, eligible, appears to be a matter of doubt†.

Upon

\* The horns of cattle are dangerous, not to horses and the other species of livestock only, but to each other; more especially to cows in calf: many abortions, I apprehend, are caused by them.

† The idea held out, by modern improvers, with respect to CATTLE, is, that a grazier ought to endeavour, as much as may be, to manufacture his materials—whether grass, turneps, or other material of fattening,—into “prime joints:” as *rumps, ribs, and surlains*, worth fourpence to sixpence a pound; rather than into *shoulder blades and neck pieces*, worth not more, perhaps, than twopence or threepence.

Yet with respect to SHEEP, a different language is held forth: in these, *legs*—the prime joints of a sheep—give place to *shoulders and breasts*, which are styled “the poor man’s mutton.”

The fact appears to be, that these arguments have been contrived, and ingeniously enough, to recommend the modern breeds of cattle and sheep of Leicestershire; and are not raised on any general principle of utility, either to the grazier or the community; as they evidently militate against each other.

While there remains a scarcity of “prime joints,” and a sufficient plenty of “poor man’s meat” in the market,



Upon the whole, I think, we may safely conclude, that ALL CATTLE ought to have the SAME POINTS: the only possible difference,

market, it may be political in the grazier (merely as such) whether of cattle or sheep, to endeavour to throw in prime joints, and, by that means, to work up his materials to the best advantage.

But supposing cattle and sheep, in general, to be got into such a form, and into such a state of flesh, as would greatly encrease the number or quantity of prime joints; and, in proportion, diminish the quantity of poor man's meat, it appears to me, that neither the grazier, nor the community at large, would profit by such an *improvement*. For the price of a commodity, at market, being in proportion to the demand, the price of palatable joints would be lowered, as the quantity were augmented: and as the quantity of inferior meat were lessened, its proportionate price would of course be encreased, so that the most probable effect of the *alteration* would be, the opulent would be relieved, and the poor distressed.

The proportion of *bone*, and other *offal*, cannot be too much lowered; provided the strength and constitution of the animal be not injured. But until an equalization of property take place, it might be wrong to attempt (were it possible) an equality in the price of meat.

This far, at least, I am clearly of opinion, that, in the general light we are now viewing cattle and sheep, preserving so much of the fore quarters of cattle, or encreasing them so far, where they are at present deficient, as to give them the requisite strength in draft, would be no detriment, either to the landed interest, or to the community: and farther I contend not, here.

rence, requisite, being that of size: and this, soil and climature would give, in a great degree.

In a lightsoiled upland situation, the SAME BREED of cattle, which, on a deep strong soil, and genial climature, were lusty and powerful in frame, would become comparatively light and active. But whether we consider cattle as beasts of draft, or as grazing or dairy stock, this change would be most desirable.

It is not my intention to recommend, to breeders in general, the adoption of one universal breed of cattle; but to show that no inconveniency, whatever, would arise to the community, were the various breeds of *this* kingdom, at least, reduced to one. Nor, after the change were effected, would there, I apprehend, any inconveniency accrue to individuals.

At present, however, we have several valuable breeds of cattle, in the island: and, in the districts in which these superior breeds are established, it would, I am clearly of opinion, be more eligible to improve the established breeds, than to introduce new ones.

Never-

Nevertheless, there are other districts of the island, whose present breeds of cattle are incapable of being rendered, in any moderate length of time, fit for the three grand purposes of cattle.

In these districts, therefore, a fresh breed is requisite; and it certainly behoves the owners and occupiers of them to introduce the most perfect breed the island at present affords, or to raise a FRESH VARIETY, and reach still nearer perfection.

To ascertain the PERFECTION of cattle, in their joint and several capacities of beasts of draft, dairy, and grazing stock, is a matter of the first importance in rural affairs. But the subject having never, perhaps, been agitated, no man may, at present, be equal to it: it is, however, a subject to which I have paid more than common attention; and I will here set down what I conceive, *at present*, to be the most desirable qualities of cattle, viewed generally, in their THREE CAPACITIES. The sketch may, at least, throw some light upon the subject; and may be serviceable to those, who shall have occasion to think upon it, in practice.

The

The head small and clean, to lessen the quantity of offal, and to give a liveliness of disposition; and hornless, for conveniency in draft, and for general safety; with the nostrils wide, for ease in work; and the eye bright and placid, to give the requisite quickness, and docility, in the same intention.

The neck thin and clean, to give lightness to the forend, as well as to lessen the collar, and make it fit close and easy to the animal in work \*.

The carcase large: the chest deep, and the bosom broad, with the ribs standing out full from the spine; to give strength of frame and constitution, and to admit of the intestines being lodged within the ribs; thereby giving freedom to activity, and beauty to the general form.

The

\* The "SHIFT" is a point the grazier will not readily give up. I wish that the shoulder, as every other part, should be mellow, in moderate condition, and well covered in a state of fatness. But the large BUNDLES of fat, which some individuals, of some breeds, form between the shoulder and the neck, are, when cattle are full of flesh, as working cattle ought to be, inconvenient in draft.

The shoulders light of bone, and rounded off at the lower point, that the collar may lie easy; but broad, to give strength; and well covered with flesh, for the greater ease of draft; as well as to furnish a desired point of fattening cattle.

The back, throughout, wide and level, as a receptacle of beef; the spine being straight from the withers to the tail, to please the eye, and *perhaps* to give a due proportion and arrangement of parts.

The quarters long, lying up high, and standing wide at the nache, to give size to the prime joints, and symmetry to the form.

The thighs thin, and standing narrow at the roundbone, to give safety to the dam, and activity to her produce; and, *perhaps*, for various other reasons.

The udder large when full, but loose and thin when empty, that it may contain the greater quantity of milk; with large "dug veins" to fill it; and with long elastic teats, for the greater ease in drawing it off.

The legs (below the knee and hock) straight, and of a middle length: their bone,  
in

in general, light and clean from fleshiness, to lessen the quantity of offal; but with the joints and sinews of a moderate size, for the purposes of strength and activity:

The flesh mellow, in the state of fleshiness, and firm, in the state of fatness; these being, I apprehend, the best criterions of the flesh of cattle: the back and sides being covered, in either state, as evenly as the carcase of this species of animal is capable of being covered, to give as even a distribution as possible, of flesh and fat; with a proportional quantity of the latter, on the inside, to enable men to gratify their sight, while they are gratifying their appetites, with that laid on without, and, *perhaps*, to endeavour to lessen the present import of FOREIGN TALLOW,—*apparently*, enormous and inordinate.

The hide mellow, and of a middle thickness; this appearing to be, on the whole, the best: but the proper thickness of the hide is, perhaps, less understood than any other property belonging to cattle. Breeders, dairymen, arable farmers, and graziers, differ much in their opinions respecting it; and the leatherfeller, perhaps, has not yet been consulted.

The

The colour,—any which can be joined with the foregoing qualifications ; it being, perhaps, of little, if any essential import. If I had the choice of it, it should be white, or nearly approaching that colour.

The constitution free from hereditary disorders, and inheriting the property of *hardiness*, whether by this term be understood, a superior faculty of bearing hard weather, hard fare, or hard work ; as well as that of milking well on good keep, while milk is drawn, and of fattening quickly, and at an early age, when milk is not required.

There are several breeds of cattle in the island, which come so near this description, that, with attention and perseverance, they might, in no great length of time, be brought perhaps sufficiently near perfection ; except with respect to HORNS.

These are the breeds of Herefordshire, Gloucestershire, and South Wales, middlehorned breeds ; the short and middlehorned breeds of Yorkshire ; the Suffex, a middlehorned breed ; with those of Devonshire and Somersetshire, of the middle cast of horn, but somewhat long.

In YOKE, in which the breeds here enumerated are still chiefly worked, horns are in a degree necessary.

But, in HARNESS, in which cattle in every quarter of the kingdom are now beginning to be worked, and in which, only, they are equal to every department of husbandry, even the middle horns are extremely inconvenient, and in a degree dangerous (I speak from sufficient experience), and have, indisputably, done more, than any other circumstance, toward preventing cattle from being used, in common, as beasts of draft in husbandry.

Wherever the LONG HORN prevails, as it does on a very considerable part of the best lands of this kingdom, cattle may be said to be incapacitated as beasts of draft; and, if no expedient can be hit upon to prevent, or check, its growth, it becomes indisputably necessary, to the PERFECTION OF ENGLISH AGRICULTURE, to extirpate the longhorned breed of cattle.

Wherever the breed requires to be changed, whether from the longhorned, or any other imperfect breed, common prudence dictates, that the most perfect breed ought to be introduced;



duced : and, of course, in my idea, a **HORN-LESS BREED**, of the foregoing description.

Horns, it is true, are natural to cattle : the buffalo, in a state of nature, requires them ; they are his only defence. But, in a state of cultivation, horns are as useless to cattle, as they would be to horses ; and who, of two breeds of horses, one with horns, the other without such an encumbrance, would chuse the horned breed ? What farmer, with his wits about him, would work a longhorned horse ? a horse with large heavy horns, a yard or more long, hanging down below his mouth, so as to prevent his coming either at the rack or manger, or standing out from his head, so as to prevent his keeper's coming within reach of it, with safety ? while there were others, without this encumbrance, to be had at the same cost ?

Horns are natural to sheep ; but, although they are not materially injurious in a state of cultivation, our ancestors have thought fit to establish breeds of sheep without them : and no inconveniency, whatever, appears to arise from the change.

The practicableness of producing cattle without horns is out of dispute : there are

I i 2 already,

already, in this island, three or four distinct breeds of hornless cattle ; or rather breeds of cattle, many individuals of which are hornless, from which, properly chosen, a breed free from horns might, no doubt, be produced.

These breeds are the old shorthorned breed of Yorkshire ; the Suffolk breed ; a breed in Nottinghamshire, propagated chiefly by the late Sir Charles Sedley, probably a variety of the Yorkshire breed ; and the breeds of Scotland ; all of which, I believe, produce occasionally hornless individuals. The galloways send out a breed, almost wholly without horns, and some of them of a good size.

For strong and middlefoiled districts, there are individuals of the YORKSHIRE breed, nearly perfect ; especially for the purposes of *milk* and *draft* : as *grazing stock*, the quality of their flesh may require some improvement\*.

For

\* Some of the GALLOWAY cattle are not deficient in the quality of their flesh. That of the NOTTINGHAMSHIRE breed has not fallen sufficiently under my notice to speak of its quality. That of the SUFFOLK breed is well known to be of a good quality.

For lighter lands, there may be superior individuals of the SUFFOLK breed, in their present state, sufficiently perfect, for a basis at least. This breed has lately been introduced, as beasts of draft, in Norfolk; and (I speak from sufficient authority) with singularly good effect.

I have digested my ideas, on this subject, with greater solicitude, as I am clearly of opinion, that, should agriculture be carried on, for a length of time, with the spirit, and on the principles, it is at present pursued, a breed of cattle, answering nearly, if not exactly, the foregoing description, will, in the nature of human affairs, become prevalent, if not common to the kingdom; and I am of opinion, equally devoid of doubt, that, wherever a *change* of breed is requisite, not a season should be let slip, before a change, which promises so much benefit to agriculture, and the community at large, be begun.

In *this* country, where the working of cattle may be said to have gained a footing among leading men; where the inconveniences of the longhorned breed is, of course, severely experienced; and where the

art of breeding is well understood; there is a fair opportunity for genius and enterprize to exert themselves, with good effect; and, it is needless to tell the breeders of this district, that he who sets about it, first, with judgement and spirit, has the fairest chance of profiting by the change.

The means of improvement scarcely need to be detailed. The first step, whether in producing a fresh breed, or in improving one in a state of neglect, is to select females; and, their imperfections being duly ascertained, to endeavour to correct them by a well chosen male; continuing to breed, on the principles already repeated, with this selection; which cannot, therefore, be made with too great circumspection.

The means of publishing and disseminating a superior breed of cattle, appear to be those of showing the oxen in harness, and the cows in full milk, and both in a state of fatness, wherever there appears a prospect of introducing them; and letting the bulls by the season, or as stallions by the leap.

THE ADVANTAGES to be expected from a GENERAL IMPROVEMENT, of the several species of livestock, in these kingdoms, will require

quire to be examined, in a threefold light,—  
as it would affect

The improver,  
The district, and  
The community.

To the IMPROVER, provided he were to act prudently on proper principles, the advantage would be, in a degree, certain. The ordinary *hazard* incident to breeding, might be somewhat encreased, at the outset, by the extra cost of the first stock; but so it is in buying valuable horses for the purpose of making up, or prime bullocks for the purpose of grazing.

Beside the instances which this district affords, almost every other furnishes evidences, which tend to prove the advantages arising to individuals, from the improvement of live-stock: even a single male, purchased perhaps by accident, has been known to be highly advantageous, in improving the value of a man's stock, and, of course, in encreasing the amount of his profits \*.

The

\* This district affords an instance. Mr. LAKING of Hall End, near the banks of the Anker, owed his superior breed of cattle to a bull which he bought incidentally

The truth is (though men in general do not appear to be sufficiently aware of it)—in a state of property, every man's possession is limited : each man occupies so many acres, and no more : consequently, in the present state of agriculture, he can produce no more than a certain quantity of vegetable food for stock ; or, in other words, his farm does, under his present management, produce only a certain quantity of herbage : and it is, of course, a thing of importance to him, whether this herbage be applied to a profitable or an unprofitable purpose ; whether it be sent to a good or a bad market.

He is well aware of the advantage of selling his wheat at six shillings a bushel, instead of four ; and the same, or a greater proportional advantage, indisputably depends, on whether he expend his herbage on superior, or inferior, breeds of stock.

This advantage, alone, is a sufficient motive to improvement : but when that of establishing

mentally at an extraordinary price (at the time he purchased him), but which he acknowledges was the cheapest he ever purchased. From a cow, his descendant, and a bull of Mr. Bakewell, the celebrated snow ox (shown some years ago in London) was bred,

blishing a superior breed; and of profiting by letting out the males, and perhaps by selling inferior females at high prices, are added, the inducement becomes still stronger: and it ought, in every case, to be remembered that he who sets out, first, has the highest chance of profiting by the improvement.

If the root be judiciously chosen, and the leading branch be preserved, nothing but perseverance is wanted, to bring home profit and honor to the improver\*.

The advantages arising to the DISTRICT of improvement are evident, in this district. The sums of money, which are annually drawn into it, have been mentioned; and to  
this

\* This district furnishes lessons to IMPROVERS: Mr. WEBSTER, tempted by high prices, parted with his leading stock, and lost his breed. Mr. BAKEWELL, Mr. PRINCEP, and Mr. FOWLER (until lately), by keeping their best stock in their own hands, have, respectively, improved their breeds.

Even DISTRICTS appear to be influenced by the same principle. WESTMORELAND, "by selling any thing for money," has lost that breed which LEICESTERSHIRE, "by giving any money for a good thing," has raised as high, perhaps, as, in its nature, it is capable of being improved. And, under the same misconduct, CRAVEN, it is to be feared, is now playing the losing game.

this advantage must be added, that arising from the improvement of stock within the district.

Yorkshire, too, affords instances of this advantage. The introduction of even one male horse drew, perhaps, several thousand pounds into the Vale of Pickering, which, otherwise, it would not have received : and the improvement of the cattle of the Vale, has been calculated at several shillings an acre, on the lands it contains.

*This*, indeed, will ever be, eventually, the result of improvement ; and it certainly concerns men of landed property to promote, by every prudent means, the improvement of livestock, in the districts in which their estates are situated.

In Yorkshire, there are BULL SHOWS : not for the purpose of selling or letting ; but for obtaining a prize medal, or other reward, to him who can *produce* the best.

Rewards of this kind are highly laudable ; but the prize ought not to be to him who *produces*, but who *breeds*, the best. In the former



former case it may be *bought* ; but in the latter a degree of *merit* must obtain it.

Another laudable example which I met with in the same scene of improvement, was that of a gentleman keeping a bull, of a superior breed, for the use of his tenants : an example which every landed gentleman, whose estate lies round his residence, might well copy. For although, in the first instance, occupiers, as they ought, have the profits of improvement, they rest, eventually, with the owners of estates.

The advantages expectant to the community, from a general improvement, in the several breeds of livestock, is evidently that of general plenty. For, the island being limited in extent, the quantity of vegetable produce, in the present state of cultivation, is given ; and the greater quantity of *profitable* animals, the superfluous part of this produce, after the appetites of the present inhabitants are sufficed with vegetable food, can be made to support and fit for their several purposes, the more plentiful these animals will become :—consequently, the  
greater

greater number of inhabitants may be supported at home, or the greater opportunity will be afforded of furnishing other nations, as their respective wants may require, with animal or vegetable productions.

END OF THE FIRST VOLUME.



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